When PCBs hit the headlines, it was as though a new substance had been created

A chemical almost unheard of a few months ago produced the latest crisis for egg producers. Rest assured, the entire food industry will be more aware of polychlorinated biphenyls in the future.

THREE MONTHS AGO an egg producer, called upon to identify PCB, might have thought it was initials for another government agency, such as Production Controls Bureau.

Not too many today can render a precise definition of PCB (polychlorinated biphenyls), but everyone in the egg industry—and a fairly large number of those outside the industry—is aware that it is a chemical substance which can contaminate food.

For three weeks in August, PCB meant chaos and near disaster to an egg industry already facing bankruptcy from overproduction and below-cost prices.

What the buying public did not understand was that eggs were being tested under *far more stringent* rules than any other food in regard to PCB levels. To the reader of a newspaper article, the fact that so many eggs were being seized and little of anything else meant that eggs alone must be dangerous to eat.

Besides the fact that PCB's have not been proven to be dangerous to *anyone's health* and FDA itself said there was "no imminent human health hazard involved," egg product was seized that contained PCB levels far below that being allowed in meat. Attempts to adjust this 0.5 p.p.m. level for eggs met with the veiled threat that the only thing that could result from the effort would be to lower the acceptable level in meat from 5.0 to 0.5 p.p.m.—and this would affect the sale of spent layers.

USDA and FDA were also apparently under heavy attack at the same time by Ralph Nader, who seemed to be trying to blow up the PCB scare far out of sensible proportions in order to embarrass these agencies. It was probably part of the campaign to scuttle USDA and FDA in favor of a consumer protection agency.

In its defense, FDA argued that the 10 times lower level was being used for eggs because they constitute a larger part of the diet of infants and old people.

Nevertheless, a person would have to consume at least 52 Large eggs at one meal (which contained maximum level of 0.5 p.p.m.) in order to get as much PCB in his system as eating one-half pound of chicken or any other meat containing the maximum level of 5.0 p.p.m.!

And no consumers were aware of this difference. Eggs were simply getting the "bureaucratic shaft."

A move to avoid duplication in government brought together six federal agencies into an interdepartmental task force to coordinate a government-wide probe into PCB contamination of food and other products. The agencies are USDA, Environmental Protection Agency, FDA, National Institute of Environmental Health Sciences, Office of Science and Technology, and Council on Environmental Quality.

What are PCB's?

PCB is the common name for polychlorinated biphenyls. It is not a pure substance, but a highly stable industrial compound with many valuable uses. This explains why it is showing up in our environment; it is widely used and it does not break down easily.

It is a mixture of chlorinated components. You pump chlorine into a mixture of biphenyl material. When it reaches certain levels, sometimes over 60% chlorine, it takes on certain physical characteristics.

While it was reported by one source that Monsanto was the only domestic manufacturer, this is unlikely since a number of concerns have licenses to manufacture PCB, including corporations

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like Westinghouse, General Electric, Allis-Chalmers, Federal Pacific Electric Co., Wagner Electric and others.

Manufacturers are also located in Germany, Italy, France, Japan and Russia.

Information indicates commercial manufacture began in 1929. The product varies from mobile, oily liquids to crystalline white solids and hard noncrystalline material. Because of its many forms and properties, PCB's have found an application in many diverse fields, such as electrical insulation, fire-resistant material, heat transfer, hydraulic fluids, lubricants for use at high temperatures and pressures, ceiling and expansion mediums, as constituents in paints, varnishes, lacquers, adhesives, inks and waxes.

Though rumors abound about PCB's appearing in various products. Poultry and Egg Institute of America's scientific director, Margaret Huston, has found no evidence PCB's are used in plastics as such. It might be used in inks used on plastic or paper cartons, however.

PCB's are used in business forms which make several copies without the use of carbon paper.

PCB contamination has been discovered in varied places during the past year, but got little publicity until the Carolina fish meal episode. Contamination of a flock of chickens in New York last year was reportedly traced to cracker meal.

The explanation given by some investigators was that the cracker meal contained old cookies and crackers that were taken from store shelves when they became too old. These were packaged in boxes made with recycled paper. In the recycling process, the ink and adhesives (containing PCB's) on the boxes were recycled along with the paper so that PCB levels gradually built up.

When a carload of old crackers and cookies is gathered, it is sold to feed companies (usually small ones). Since too much labor is involved in removing the cookies and crackers from their packages, they grind up everything—including the wrappers. Then PCB's show up in the feed.

Cracker meal contaminated with PCBs was traced to inks in recycled paper

PCB's have been found in animal by-products originating in Illinois, in spent layers in Mississippi which ate feed which originated in Oklahoma, and in turkeys in Minnesota—traced to animal by-products from a local rendering plant which were incorporated into feed.

Fish meal imported from Peru at several U. S. points was found to be contaminated with PCB's.

The widespread reports of PCB contamination "sound like somebody has perpetrated a great evil," Mrs. Huston declares, "but the reason these compounds are so widely used is that they are handy for so many jobs because they don't break down easily. This is what you look for if you're trying to build a better mousetrap. PCB's are considered to be inert, and it's their inertness that makes them valuable. But this is also the reason they remain in our environment and wind up in chickens."

Into the headlines

How PCB's suddenly hit the spotlight is well known in the poultry and egg industry. PCB's leaked from a screw-type container being used to kill salmonella in fish meal at East Coast Terminal, Wilmington, N. C. The contaminated fish meal was mixed with feed that was sold to poultry and hog producers in at least 12 states, although shipments to Indiana and Arkansas were reportedly stopped before being fed.

The situation could have become more widespread and could have affected much more product had not Holly Farms, Wilkesboro, N. C., discovered high PCB contamination in breeder flocks consuming the fish meal. Low hatchability promoted its investigation.

About 88,000 chickens were destroyed when first tests showed that PCB contamination exceeded 5 parts per million (p.p.m.). USDA moved in to begin testing hens and broilers over the affected area, but on August 27 reported it had found only one lot of turkeys, one lot of hens and one hog containing more than the maximum acceptable levels out of 352 tests on hens, 126 on broilers, 143 on turkeys and 66 on hogs. PCB's found per million parts of total edible tissue were 0 to 5.3 in hens, 0 to 0.7 in broilers and 0 to 11.8 in turkeys.

It appeared the worst of the problem might be over. But few in the industry in mid-August were aware that FDA had set the maximum tolerance for PCB's in eggs at 0.5 p.p.m. (one-half part per million), one-tenth as high as for meat. USDA, having to follow this far lower tolerance, tested 169 lots of egg products by August 27 and had found eight lots of frozen, liquid or dried egg from four Southeastern producers above that level—ranging from 0.6 to 2.8 p.p.m.

Thus began the "Great PCB Scare" that grabbed newspaper and TV headlines all across the country, sending fear into consumers that they might be eating "contaminated" eggs.

Egg prices, responding to the third voluntary cutback program of United Egg Producers, had climbed from depression prices in early July to near production costs when the PCB scare hit. The Southeast, due to greater compliance with the voluntary cutback, was in the best balance in the country with no surpluses to speak of.

National Egg Co., the regional

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co-op representing producers in that region, went from a net long position of only 475 cases of eggs on August 9 to a surplus of 12,945 cases on August 23. The scare headlines had cut sharply into egg demand at retail and buyers were even more cautious. Buyers in other areas who usually were customers for Southeastern eggs canceled orders and sought locally produced eggs.

The net result was that surpluses in the Midwest and Northeast were cleaned up at the expense of the Southeast, but the industry's image suffered everywhere.

Part of the answer was in that USDA froze all egg products produced at 20 plants in 10 Southeastern states. One plant in the Northeast also had to hold up product. Breakers, consequently, stopped buying product in these areas until their current stocks could be tested. They were told they would have to obtain statements declaring product free of PCB contamination before they could buy. Rather than take a chance, they quit buying altogether.

The irony of the situation was that this forced eggs, which otherwise would have been broken for egg products, into the shell egg market, further depressing a market already weakened by a slack in demand. If these eggs were, indeed, contaminated, the result was that they *reached the consumer much quicker!*

Many producers dumped low-grade eggs into retail channels at greatly discounted prices rather than risk having product tested and refused by breakers. They often did this even if they were certain that no PCB-contaminated fish meal was fed to their birds. Tests for a half part per million are so critical that some laboratories probably lacked the ability to read accurately at this level (recognized as being as near to zero tolerance as is feasible to read). Therefore, producers reasoned, they were taking a chance in having product tested, whether or not there was likely to be PCB's present!

Heretofore, few labs had looked for PCBs, so many lacked actual testing experience

USDA released a list of about 40 laboratories which told USDA that they could do the testing. USDA furnished the methodology to be used in such tests so that all would run tests the same way.

In early September, USDA had completed tests on most suspected egg products and had withdrawn the ban on all but one plant. Eggs began moving to breakers again and, correspondingly, egg prices began to make their traditional September rise. But for many egg producers, the damage had already been done and bankruptcy was staring them in the face.

Testing for PCB's

A Carolina egg marketing cooperative was virtually put out of the egg business when tests began to show hens and eggs contaminated with PCB levels exceeding those allowed by FDA.

Eggs from some flocks tested as high as 2 p.p.m., but the average level—according to tests—was 1 p.p.m. Since this was above FDA's tolerance for eggs, the co-op made a decision to slaughter older birds and force molt the greatest part of several hundred thousand layers in the hope that the PCB contamination would drop to acceptable levels before the birds started laying again.

The puzzling part was that eggs from three flocks tested *below* the 0.5 p.p.m. level. And all of the various flocks were fed the same rations.

The conclusion reached by the co-op's general manager was that the testing procedures were at fault. Can results vary from lab to lab?

Margaret Huston, PEIA scientific director, has some ideas on this. She says all labs on USDA's list were furnished the correc methodology for testing PCB's b that agency. But perfect result are not obtainable every time There are two critical points, sh says:

1. The sample tested must b *truly homogeneous.*

2. Technical competence an experience of each lab vary.

There should be no "real gros errors" from any of these labs she says, but it is only recentl that anyone has been looking fo PCB's.

PCB is a chlorinated hydrocar bon quite similar to DDT. It is contaminant, not a carcinoge (cancer causing).

Can PCB be mistaken for DDT or vice versa?

Mrs. Huston says the compound PCB has been known to interfere with test results for DDT since 1966. Anyone deeply involved in testing should know this. However, labs in the past paid no attention to PCB's because no one was looking for them. They were looking for DDT. She explains:

"If you're going down the road looking for 92nd Street, you're not concerned when you see 45th or 56th Street; it's of no interest to you. When you run this test, you're looking for a *precise peak* or spot, and you have to *ignore* other peaks."

She recognizes that some labs may lack the necessary experience of looking for PCB's, but this area will improve rapidly now that attention is being focused on this compound.

"Lay people talk about labs mistaking DDT for PCB. But it's like fingerprinting. Each compound has its own individual printout. If you're not an expert, you could get mixed up, as I'm sure a non-expert could mix up the identity of fingerprints," Mrs. Huston says.

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