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PCB's and poultry contamination: what you need to know

Polychlorinated biphenyls or PCB's as they're commonly referred to have moved into the limelight recently following PCB contamination of fish meal which later was incorporated into poultry feed in the Southeast. Poultry which ate the feed then would be subject to possible PCB contamination. USDA reports that to date all test results for PCB's in slaughtered poultry have been within FDA interim guidelines. Some live poultry, suspected of containing PCB's, has been destroyed on the farm of origin, however. Without a doubt, you're going to be hearing more about PCB's in the future. But what are PCB's, where and how are they used and how might they contaminate poultry? The following story on PCB's from University of Georgia Poultry Tips answers those questions and many more. —Editor.

• The term PCB is new for most people in the poultry industry.

PCB's have been studied since 1881, however, and have been in extremely wide industrial use since 1930. The chemical properties which make PCB's desirable industrial materials are their excellent thermal stability, strong resistance to both acidic and base conditions, their resistance to oxidation and their general inertness which makes them very stable, or inactive, compounds.

The most important physical properties of PCB's are: low vapor pressure (they have very high boiling points); low water solubility; a high dielectric constant (they will not conduct electricity except under extreme conditions).

The largest single use of PCB's is related to their electrical properties — as coolant-insulation fluids in transformers. They are used in ballasts for fluorescent fixtures and plasticizers in electric wire and cables. Due to their thermal properties and fire resistance they are used in high pressure hydraulic fluids, specialized lubricants, gasket sealers and machine tool cutting oils. Other miscellaneous uses include: binders in epoxy paints, toughening agents in varnishes and waxes, adhesives and carbonless paper.

The PCB property which has brought about the current situation in the poultry industry is its heat transfer usage. A USDA statement indicates that a shipment of Peruvian fish meal was being heat treated. Fluid PCB's were being used as heat transfer materials when a leak developed in the heating chamber, which resulted in a contamination of the fish meal. Unknowingly, the fish meal containing PCB's moved into the feed trade. Various quantities of that meal were located in 12 Southeastern states. The source plant where the accident occurred has been closed and all existing fish meal has been seized.

Only one research publication has been found that related poultry mortality to the use of PCB's. In the report no data were presented as to age, number of birds or levels of contamination. Trout are sensitive to PCB's but dosages must be more than 500 times higher than DDT to have the same results. No report in the field or in the literature indicates any symptoms in mature birds. Feed consumption, egg production and livability have been normal in all mature flocks observed and reported.

Hydrocarbons such as PCB's, chlordane, dieldrin and DDT have been shown to activate enzymes in the liver which transform estrogen and other compounds (DDT, dieldrin and certain drugs) into a more water-soluble form that is readily eliminated from the body. Estrogen is involved in calcium metabolism and the presence of hydrocarbons in tissues has been suggested as the reason for soft shelled eggs among some wild birds.

PCB's have excellent safety record

PCB's have received little attention in biological research because of their excellent safety record in wide usage. When routine pesticide analyses are made using gas-liquid chromatography, a standard laboratory procedure, PCB's will show up on the chromatogram similar to dieldrin, DDT, DDE, Aldrin and heptachlor oxide. Most laboratories now utilize procedures which separate pesticides and PCB's.

In tests conducted at the University of Cincinnati, Aroclor vapor (Monsanto trade name for PCB's) toxicity studies on guinea-pigs, mice, rabbits and rats showed no severe effects after 24-day exposure to 0.83 parts per million (ppm) for 7 hours per day on 17 of those days. Even after more prolonged tests there were no severe effects from the Aroclor 1242. In the second study, 3 groups of beagles were fed Aroclor 1242, 1254, and 1260 respectively at a rate of 100 ppm in their diets. After three months no significant abnormalities were noted and the experiment is being continued.

Based on the chemical and physical properties of PCB's and on their extremely wide occurrence and over 40 years of usage, it is difficult to believe that there is any danger to the consumer. All products are being carefully monitored, however, to insure that there will be less than 5 ppm PCB's in poultry meat being used for human consumption.

Get a laboratory analysis

Poultrymen who suspect PCB contamination should submit samples of these materials to a reputable laboratory for analysis. Since limited laboratory facilities are available one should check with his ingredient suppliers to avoid test duplication or relatively expensive analysis. All feed and ingredient handlers should follow the standard recommended feed quality control practice of maintaining samples of all ingredients and finished feeds for future reference. A list of laboratories with PCB determination capabilities is available from the Department of Extension Poultry Science, University of Georgia, or U. S. Department of Agriculture, Washington, D. C. Methodology for the performance of PCB analysis can be obtained from Paul Elliott, Chief, Chem. & Microb. Br. Lab. Services Div. Room 604 C&MS USDA, Washington, D. C. 20250. Telephone No. 202-388-4212. —*End*

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Curb on PCB Sale Urged

Councilman Thomas J. Manton today urged the city Health Department to curb sales of polychlorinated biphenyls (PCB), chemicals closely related to DDT.

The Woodside Democrat pointed out that he has received information that PCB's have been linked to birth defects and liver damage in animals.

He said chickens raised in 12 Southern states have become contaminated with the chemical as a result of being fed tainted fish meal.

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