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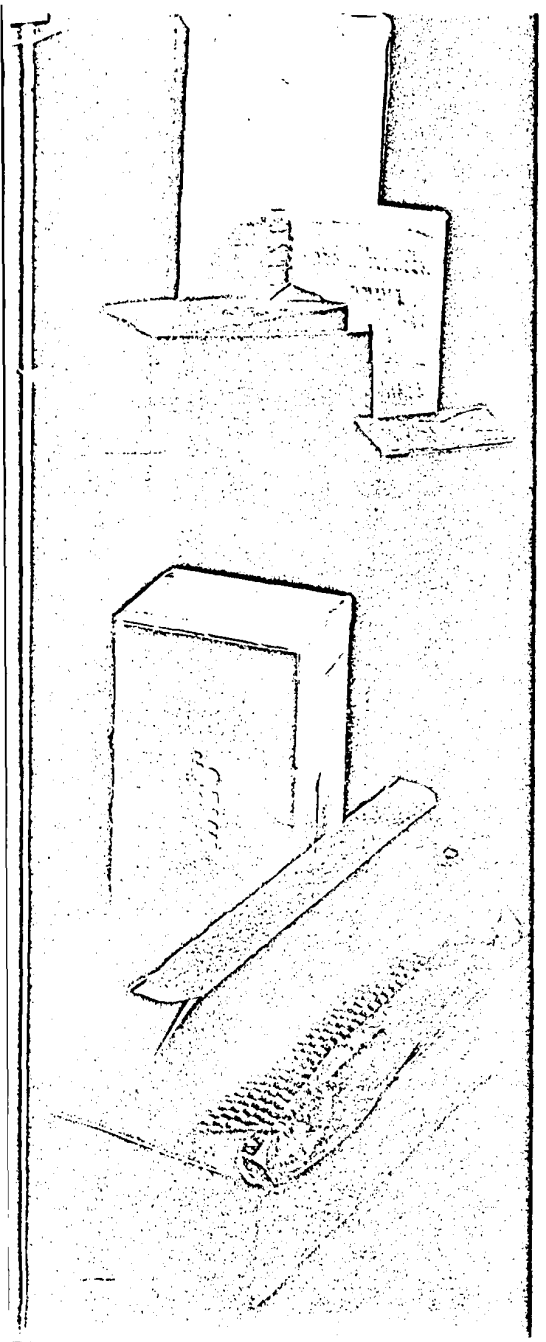
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The questions in this issue are based on all 24 lessons in the course on instrumentation for the pulp and paper industry. Please read instructions on page 41 before completing paper.

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Perspective on the panic over PCB

Recycled paper in food packaging under scrutiny, but FDA says the alarm has been overdone. Has PCB been confused with DDT?

The safety of food packaging has been made suspect by a huge amount of adverse publicity given to the dangers from the chemical Polychlorinated Biphenyl, or PCB, as it has become widely known.

Alarmists seeking headlines, aided and abetted by imbalanced reporting, have created public, and as a result supplier, confusion over the use of recycled paper in food packaging.

A rundown on the facts involved in the PCB situation shows industry and government are performing well in protecting the food supply from possible harm from PCB's.

PCB's are a family of chemicals which have been widely used for industrial purposes for the past 40 years. The substances have been used in the manufacturing process or as actual components of many products, including some plastics and adhesives, printing inks, electrical and building materials, heat exchange mechanisms, and paper products.

Food and Drug Commissioner Charles C. Edwards at a Sept. 29 press briefing attempted to try to help establish perspective on PCB's, the extent of their presence in the food supply, the implication this has for human health, and what government is doing to define and control the problem generally.

Dr. Edwards stressed there was no need for public alarm over PCB's. However, he made it clear that there were many unanswered questions about the chemical's safety, including the size and significance of long-term, low-level human exposure.

FDA has developed the technology to identify and measure PCB content in foods and other substances. However, PCB's are difficult to detect and are often confused with other compounds, particularly DDT.

Dr. Edwards believes "the ultimate solution to the PCB problem lies, at least in part, in restricting uses to those places where the substances can be safely and beneficially employed."

The Toxic Substance Control Bill proposed by the Nixon Administration would clarify and strengthen FDA's authority over all chemicals.

FDA is hoping to move slowly to prevent widespread disruption of current marketing practices that could have an unnecessary impact on the economy.

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Enforcement activities by FDA, the USDA, and other government agencies are presently considered by the government as "adequate to protect the public health from the occasional accident which can result in short-term but controllable human exposure to PCB's in the food supply."

One source of the contamination of paper products used in packaging food is believed to be carbonless carbon paper, manufactured by National Cash Register. NCR discontinued use of PCB's on June 1. PCB's were used for the dye in the carbonless carbon paper. PCB's were reportedly used in rates as high as 3 per cent (30,000 p.p.m.) by the weight of the paper.

Industry officials believe the problem will diminish but it may take up to six months to get most of the paper out of circulation.

Use of PCB in ink may be another factor contributing to the problem, some FDA staffers believe. An investigation of this matter is being conducted by the American Paper Institute which has been cooperating closely with FDA.

The Food and Drug Administration has conducted a survey on packaging materials for 15 food products. FDA was particularly concerned about greyboard and other recycled paper used in packaging.

Reo Duggan, FDA Deputy Associate Commissioner for Compliance, reported in late September on FDA's market basket testing for PCB's and testing of packaging materials. Of 720 composite samples during fiscal years 1970 and 1971, 22 were found to contain PCB residues ranging from a trace to 0.36 ppm. In three cases, the source of the PCB's was packaging

FDA CINCINNATI DISTRICT OFFICE PACKAGING INVESTIGATION

PCB's in PAPERBOARD

Grade or Use Term	Description	Product Use	PCB 1242 in ppm
Gerbner Board	Four layer all bleached paperboard from recycled paper	Hamburger box	73
Sulfate Board	Single stock board made from virgin sulfate pulp	Baked food	1.7
		Pizza	4.7
Food Packaging	Paperboard with a bleached liner from selected grades of waste selected on basis of no odor or taste	Box for crackers	433
		Corn bread box	30
		Gelatin box	29
		Rice box	44
		Pecan Bars box	29
Chip board	Paper with one-half to one-third mixed paper in filler. Mixed paper is identified as clean, dry waste paper. May contain over 10% box cuttings and news or news stock such as magazines and catalogues	Shredded Wheat dividers	46

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PCB's in FOOD PACKAGES and FOOD PRODUCTS

Sample No.	Sample	Arochlor 1242 in ppm Food product	Box or carton	Other
	Carton dividers			5.3 (divider)
	Cartons for Shredded Wheat		18	
062-065E	"		12	
027-695E	Shredded Wheat in cardboard cartons	0.5	14	11 (divider)
013-123E	"	0.5 0.1 ck	18 8 ck	6.4 (divider) 6.2 ck
INV 008-765E	"	0.3 0.3 1.0 1.9 0.9	15-30	
INV 062-260E	"	none 1.5	17	(Re-analyzed after holding 6 weeks)
INV 008-756E	Bread crumbs in cylinder type cartons	none	20	
INV 008-757 E	Cookies in cellophane package with cardboard dividers	none	none	none
INV 096-802E	Cookies in cardboard box with cellophane inner wrapper	none	33	none (inner wrapper)
INV 061-880E	Crackers packaged and unpackaged in cardboard cartons	none	8.3 empty 10 packed	none
010-909E	Crackers in 2 lb. boxes	none	132	185 (inner plastic bag) 6.1 (waxed paper)
010-910E	Crackers in 1 lb. boxes	none	99	45 (inner plastic bag) 5.1 (waxed paper)
008-759E	Spaghetti in cardboard package	none	16	
008-760E	"	none	14	
INV 016-206E	Cartons for Spaghetti dinner		17 12 ck	
INV 016-208E	Cartons for Spaghetti dinner		13 13 ck	
INV 016-207E	Cartons for Noodle and Cheese Dinner		21 15 ck	
010-928E	Confectioner's Powdered Sugar	none	17	none (inner wrapper)
INV 016-209E	Cartons for Noodle with Chicken Dinner		5.8 3.6 ck	
002-805E	Spaghetti Dinner	none	14	
002-808E	"	3.0 1.6 ck 2.1 ck	1144	
002-806E	Noodles Dinner	0.4	6.3	
002-807E	"	0.3	17	
002-804E	Macaroni Dinner	none	8.1	
055-234E	Hot Roll Mix	none	27	none (inner wrapper)

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Sample No.	Sample	Arochlor 1242 in ppm Food product	Box or carton	Other
055-235E	"	none	19	none (inner wrapper)
063-745E	"	none	104	none (inner wrapper)
093-586E	"	none	88	none (inner wrapper)
000-685E	"	none	32	none (inner wrapper)
INV 000-437E	Cartons for White Hominy Grits		16 20 ck	
INV 000-438E	"		22 17 ck	
INV 000-439E	"		39 29 ck	
INV 000-440E	"		26 27 ck	
016-752E	Quick Grits	0.6 0.4 ck	21	
INV 039-981E	Pudding and Pie Filling	none	none	none (inner wrapper)
010-926E	Dark Brown Cane Sugar	none	23	none (inner wrapper)
010-927E	Light Brown Cane Sugar	none	18	35 (inner wrapper)
INV 077-951E	Cereal Six Pack-601 oz. cardboard boxes of various cereals	1.1 (composite)	47	(Note: Check analyses run on the individual cereals)
	Mixed (2)	1.0, 1.1	30	29 (box c removed printing)
"	Oatmeal (2)	1.6, 1.6	32	28 (box c removed printing)
	High Protein (1)	1.9	45	
	Rice (1)	0.8	29	
Boston Total Diet Basket April/May '71	Shredded Wheat	24	70	497 (divider)
Minneapolis Total Diet Basket April/May '71	Corn Meal	0.8		
	Pancake Mix	trace*		
	Wheat Cereal	trace*		
Kansas City Total Diet Basket June/July '71	Corn Meal	0.2*	12	
	Pancake Mix	0.1*	6.7	
	Rice grain	trace*		
	Puffed Rice	trace*		
	Hot wheat cereal	trace*		
	Wheaties	trace*		
	Corn Flakes	trace*		
	Wheat Bread	trace*		
Baltimore Total Diet Basket June/July 1971	Oats	2.4 (2.5)	111 (122)	
	Grits	0.5 (0.4)	23 (22)	
	Cake Mix	0.5 (0.3)	4.2 (3.6)	
	Pancake Mix	0.3 (0.1)		
	Corn Flakes	none		
	Shredded Wheat	none		
	Puffed Rice	none		
	Whole Wheat Bread	none		
INV 021-321E	High Protein Baby Cereal	trace	19	
INV 077-950E	High Protein Baby Cereal	trace	3.4	

*Calc. as 1242; may be a mixture

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materials. No PCB's have been found in fresh fruits or vegetables.

The following levels of PCB's were found by FDA in various types of packaging: gardner board, 73 p.p.m.; sulfate board, 1.7 to 4.7; paperboard food packaging, 29 to 433; clip board, 46; carton for shredded wheat, 14 to 18; cookie boxes, 33; cracker boxes, 99 to 132; spaghetti and noodle cartons, 12 to 21; powdered sugar, 17; cartons for white hominy grits, 16 to 39; cereals, 29 to 47; and corn meal and mixes, 6.7 to 12.

Fewer foods were found by FDA to be contaminated. The list included: shredded wheat in cardboard cartons, none to 0.5 p.p.m.; spaghetti and noodle dinners, 0.3 to 3.0; quick grits, 0.4 to 0.6; cereals, 0.8 to 1.9; shredded wheat, 24; corn meal and mixes, trace amounts to 0.2.

FDA has not yet established PCB guidelines for packages or their contents.

FDA is considering amending a number of Food Additive regulations dealing with indirect additives to specifically include requirements that would prohibit migration of PCB's from packaging materials. Other alternatives are also available to FDA.

Doug Worf of the Environmental Protection Agency, when questioned about the effect FDA's action would have on EPA's drive to encourage the use of recycled paper, said he hoped it would be possible to continue efforts to promote the use of recycled paper "in spite of this temporary problem."

In October, the American Paper Institute advised its members about the PCB situation.

The Biological and Chemical Research Committee of API became aware of the presence of PCB's in the environment at the beginning of 1971.

At committee meetings, API members reported on PCB analysis of production samples which started over a year ago. Test results indicated the presence of PCB's "in some samples made from wood pulp and also made from recycled fibers."

A number of API members have been monitoring samples and have been maintaining extremely low levels of PCB's in the production of paperboard for food packaging, API advised its members.

API has been told that in the production of pulp, PCB's can be picked up from process water as lakes and streams have been affected. A recent report of a 1969 survey of fresh water fish selected from lakes and streams in mainland U.S. and Alaska by the Department of Interior indicates these fish contain residues of PCB's along with the chlorinated pesticides such as DDT.

On January 12, 1971, combination paperboard producers were advised by API to discontinue use of cuttings from business forms plants that might contain PCB-type carbonless carbon paper.

As of June 1, 1971, API understood that the production of PCB coated paper stock supplies of business forms should be largely exhausted six months from the date.

API's Board of Directors at its recent meeting in Colorado Springs, Colo., approved, on recommendation of the Biological and Chemical Research Committee, a $15,000 research contract with Hazelton Laboratories, Falls Church, Va., to determine what amounts of PCB's may be contained in all grades of paper and paperboard used for food packaging and to investigate what PCB migration to food there may be from packaging.

The Biological and Chemical Research Committee has urged API member companies to test production samples of major grades of paper and paperboard for PCB content whether the grades are converted into food packaging or other products.

The first part of the Hazelton study concerns the presence of PCB's in paper and paperboard. It will be more comprehensive if a wide range of grades and mill locations are included, API advised its members.

API members were told that they can retain Hazelton to conduct PCB analyses on production samples. API also offered members the names of other qualified testing laboratories.

Among those who have been strongly critical of FDA's handling of the PCB matter are Ralph Nader and Congressman William Ryan (D. N.Y.). Rep. Ryan asked the Council on Environmental Quality to conduct a coordinated investigation of PCB's on April 9, 1970.

The PCB question is far from settled. Six Federal agencies agreed in early September to establish an inter-departmental task force to coordinate a government-wide investigation into PCB contamination of food and other products.

Members of the inter-agency task force, which will be coordinated through the Office of Science and Technology and the Council on Environmental Quality, are the Environmental Protection Agency, the Food and Drug Administration, the National Institute of Environmental Health Science, and the Department of Agriculture.

Both the Agriculture Department and the Food and Drug Administration have been involved for some time in follow-up investigations of several industrial incidents which have resulted in low level PCB adulteration of various food products.

The PCB Task Force is intended to expedite the search for answers and solutions by bringing together the combined resources and authorities of cooperating government agencies.

The PCB Task Force has two major objectives:

(1) To insure maximum, effective coordination of government response against specific and preventable PCB contamination as such problems may arise.

(2) To develop a long-range strategy for coordinating scientific resources to better define the PCB problems and its possible implications for human health.

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