



REPORTED MORBIDITY
FEBRUARY/MARCH, 1977

MONTHLY MORBIDITY REPORT

Provisional Statistics

from the

OFFICE OF PUBLIC HEALTH STATISTICS

DEPARTMENT OF HEALTH
AND HUMAN RESOURCES
OFFICE OF HEALTH SERVICES
AND ENVIRONMENTAL QUALITY

LEVEL OF PCB'S AND INSECTICIDES IN THE MILK OF TEN NEW ORLEANS WOMEN

BETTY OSEID, M.D.
GEORGE HAUSER, M.D.

G. SCANNEL, B.S.
JOAN SULLIVAN, R.N.

An increase in interest in promoting human milk for nearly all infants is evident from reports and articles which are appearing in medical and lay literature. The advantages include superior nutrition and digestibility, protection from infections, decreased exposure to allergens, and the psychological bonding between mother and child.¹ Recently the Committee on Nutrition of the American Academy of Pediatrics has advocated human milk as the preferred nutritional source for full term, normal infants.²

Concurrently, much concern has been shown in monitoring levels of industrial pollutants and insecticides in foods of all types. Isolated reports have shown that poly-chlorinated biphenyl compounds (PCB's) are found in human milk as well as other foods. PCB's are used widely in the production of printer's ink, plastics, electrical equipment and adhesives. Following industrial accidents involving PCB exposure, pain, skin disorders including acne and increased pigmentation, and edema have been reported. Thus, most states and the Environmental Protection Agency (EPA) monitor levels in milk and other foods sold. Fresh water fish and foods containing animal fat have higher levels than grains, fruits and vegetables, because PCB's are accumulated in fat and are not rapidly degraded.

A preliminary survey taken in other states showed that human milk from 65 of 67 women tested contained PCB's, but at lower levels than the maximum acceptable levels for

commercially sold milk.³ The current tolerance set by the Food and Drug Administration (FDA) for PCB's in fish is 5 parts per million (ppm) in the edible portion, 5 ppm in poultry, and 2.5 ppm in milk and dairy products (fat basis). Other foods have lower tolerances. In the period 1973 to 1975, the levels in foods decreased⁴ due to limiting the use of PCB's to electrical manufacturing, not using fresh water fish in the feed for animals, closer surveillance on packaging to prevent leaching of PCB's from paper and wrappers, and decreased pollution of waterways. The sole producer of PCB's in the United States is currently phasing out production entirely.

The tolerance levels for food sold in Louisiana match the FDA levels, and regular monitoring of foods has shown very little PCB contamination except for occasional fresh water

COMMUNICABLE DISEASE BULLETINS

MENINGOCOCCAL ILLNESS

The outbreak of meningococcal illness in southern Louisiana, first noted in December, 1976, is continuing, with 72 cases discovered between November 1 and March 15. Serogrouping has been done on 37, with 33 group B, 3 group C, and 1 group Y. Of isolates tested for sulfa sensitivity, 26 of 27 group B's are sulfa sensitive, 0 of 2 group C's, and 1 of 1 group Y. Case reporting to the Epidemiology Unit (504-568-5006) is urged.

INFLUENZA

Widespread influenza activity occurred throughout the state beginning in mid-January and tapering off rapidly by late February. Type B was confirmed as the etiology in diverse locations. Several isolates of A/Victoria have been made in New Orleans, but no outbreaks due to this agent have yet been detected.

REYE'S SYNDROME

The Epidemiology Unit is investigating cases of Reye's Syndrome (acute encephalopathy and fatty degeneration of the viscera), which has been linked epidemiologically to influenza B. More than 350 cases occurred nationwide in 1974, in the wake of the last outbreak of influenza B. Six cases have been reported in Louisiana between January 1, and March 15, 1977, including four fatalities.

fish levels above tolerance. Salt water seafood sold in this state apparently does not contain PCB's.

Closely related compounds, poly-brominated biphenyls (PBB's), have caused great concern since a tragic error occurred in Michigan in 1971 and 1972. A PBB-containing fire retardant product was packaged in bags similar in appearance to an animal feed supplement, distributed to Michigan farmers, and fed to their animals. Soon the animals became sick, with high rates of neonatal death and decreased milk production, and some farms were quarantined. PBB's, however, got into the food chain and were accumulated by humans before the contaminated animals and food products were eliminated. At present the Michigan Department of Health and numerous consultants are assessing the consequences. Preliminary results indicate that $\frac{2}{3}$ of the persons exposed to PBB's do not have symptoms while $\frac{1}{3}$ have some type of musculo-skeletal, gastrointestinal, or nervous system problem.⁵ Whether these symptoms are related to or caused by PBB's has not been determined. Questions arise whether mothers who have PBB's in their milk should continue to breast-feed, and what should be acceptable levels of PBB's in food. An expert panel convened by the Michigan State Health Department concluded that there is no reason on the basis of current information to recommend any change in the basic medical attitude toward the advisability of breast-feeding for the general population of nursing mothers in Michigan. Those mothers living on contaminated farms, however, should not breast-feed their infants.⁶ The PBB contamination problem is largely confined to Michigan, and PBB's are not ordinarily found in food and milk samples in Louisiana.

Other organic compounds such as insecticides (DDT, DDE, and dieldrin), which may be present in foods, are also monitored regularly by the FDA throughout the nation and in Louisiana by the Bureau of Laboratories of the Louisiana Department of Health and Human Resources (DHHR). Since the advent of strict controls on DDT and other pesticides, the level of DDT found in food has been decreasing. DDT is considered by many to be stored in human fat, with an equilibrium between intake in food and excretion in urine, so that continued intake does not lead to ever increasing levels.⁷ DDT is present in varying amounts in human milk. The World Health Organization (WHO) set a permissible daily intake of 0.01 mg of DDT (and related pesticides) per kilogram for infants.⁸ It should be emphasized that DDT has been remarkably safe and no symptoms have occurred in humans, including infants, who have had prolonged contact with

or ingestion of high amounts of DDT. Laboratory studies in mice which have developed hepatomatous lesions after exposure to high levels of DDT have not been duplicated in non-rodent mammals.

In an effort to assess the potential exposure to PCB's and insecticides in New Orleans infants who are breast-fed, a study on the breast milk of 10 women was carried out in December 1976 and early January 1977. Nursing mothers affiliated with LaLeche League volunteered to collect samples of their milk. This organization is composed of mothers who promote breast-feeding. Seven of the donors were life-long residents of Louisiana, while two (#1 and #6) had lived in Michigan prior to coming to New Orleans within the past two years, and one other mother (#10) had lived in Maryland until six months prior to the study. All were middle class women living within New Orleans. These mothers hand expressed their milk into glass (not plastic) containers. The fat contents of these samples were analyzed by the Bureau of Laboratories of DHHR using a standard gas chromatographic method.⁹ In addition, samples of a proprietary infant milk formula and a soy formula were analyzed after reconstitution with water and also after heating in plastic infant feeding bottles for 25 minutes in boiling water (terminal sterilization method).

These results are shown in the following table:

LEVEL OF PCB'S AND INSECTICIDES
IN HUMAN MILK AND INFANT FORMULAS

SAMPLE NUMBER	PCB	DDE	DDT	TOTAL INSECTICIDE ppm (fat basis)
1. Human	none	0.136	none	0.136
2. Human	none	0.926	none	0.926
3. Human	none	0.204	none	0.204
4. Human	none	0.264	none	0.264
5. Human	none	0.457	0.138	0.595
* 6. Human	none	1.632	0.620	2.252
7. Human	none	0.591	0.229	0.820
8. Human	none	0.514	none	0.514
* 9. Human	none	2.083	0.638	2.721
* 10. Human	none	2.215	0.339	2.554
11. Formula, milk	none	none	none	none
12. Formula, milk heated in plastic bottle	none	none	none	none
13. Formula, soy	none	none	none	none
14. Formula, soy heated in plastic bottle	none	none	none	none

* Total insecticide level exceeds 1.5 ppm (on a fat basis), maximum accepted level in Louisiana for milk sold at retail.

No PCB's were detected. The level of DDT and similar pesticide residues was below the standard set for milk sold in Louisiana in 7 of the 10 samples. In three samples, however, (#6, #9, #10) the total insecticide residues exceeded 1.5 ppm and varied from 2.3 to 2.7 ppm. Fat content of human milk is variable but averages about 4.5%. The highest total insecticide residue of 2.7 ppm in fat content would equal 0.12 mg per liter. If one liter/day were consumed this would exceed the recommended maximal level set by the WHO for cow's milk of 0.01 mg per kg of body weight per day in any infant less than 12 kg. It should be emphasized that no adverse effect due to DDT residues in human milk has ever been documented. Also, the WHO standard is set primarily for surveillance on cow's milk and other foods which will be ingested throughout life rather than for a short period in infancy. For the majority of samples, 7/10, the level of DDT residues was far below the accepted tolerance, and two of the three samples with elevated levels came from women who had moved to New Orleans from other states.

These data, though preliminary in that only a small sample of New Orleans women are represented, are reassuring in showing no PCB present in the mothers' milk tested. The absence of PCB's, DDT, and DDE from the milk formula and soy formula tested is also reassuring though clearly, more samples must be run before any generalizations can be made. The Environmental Protection Agency (EPA) is currently analyzing samples of human milk from 1,000 mothers in many parts of the United States in the hope of providing a definite answer on the prevalence of PCB's in human milk. Despite the absence of known toxicity from DDT and DDE, their presence in significant amounts in New Orleans mothers' milk is a disturbing reminder of the persistence of many forms of environmental contamination.

Does the presence of insecticide residues in mothers' milk mean that women should not breast-feed? We believe that the answer to this

question is a definite NO. The advantages of breast-feeding to a willing mother in terms of nutrition, protection from infection, and mother-infant bonding are certain, whereas any danger from insecticides is only a theoretical possibility not established by years of research. Although we hope that Louisiana physicians and other health personnel will continue to recommend breast feeding without reservation, we think it would be prudent for lactating women or pregnant women planning to breast-feed to limit their intake of fresh water fish, since for most women these are the major source of PCB's; to avoid crash diets which may mobilize fat-soluble pollutants; and to avoid jobs involving heavy exposure to known pollutants. Continued surveillance of foods to prevent further accumulation of potentially toxic substances in humans will be carried out by the Central Laboratory of the Louisiana Department of Health and Human Resources.

REFERENCES

1. Oseid, B.J.: Breast-feeding and infant health. *Clinical Obstetrics and Gynecology* 18: 149-172, June, 1975.
2. Committee on Nutrition, American Academy of Pediatrics: Commentary on breast-feeding and infant formulas including proposed standards for formulas. *Pediatrics* 57: 278-285, Feb., 1976.
3. Anonymous: PCB's in breast milk-group prove risks. *American College of Obstetricians and Gynecologists Newsletter*, 20: 3, November, 1976.
4. Jelinek, C.F. and Corneliussen, P.E.: Levels of PCB's in the U.S. food supply. Paper presented at the National Conference of Polychlorinated Biphenyls, Nov. 19-21, 1975, Chicago, Ill.
5. Anonymous: Study in Michigan indicates that PBB caused health woes. *The Wall Street Journal*, p 28, Jan. 5, 1977.
6. Panel on Recommendations Relating to PBB and Nursing Mothers: Minutes of a Meeting on October 14, 1976, Michigan Department of Public Health, Dr. Kenneth R. Wilcox, Jr. Chairman.
7. Jukes, T.H.: When friends or patients ask about DDT. *Journal of American Medical Association*, 229: 571-573, July 29, 1974.
8. Wilson, D.J., et al: DDT concentrations in human milk. *American Journal of Diseases of Children*, 125: 814-817, June, 1973.
9. McMahon, B.M.: *Pesticide Analytical Manual, Volume 1. Revised. Method 211-13h*. Washington, Food and Drug Administration, 1975.

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS REPORTED MORBIDITY FEBRUARY, 1977	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIOUS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	RABIES IN ANIMALS	RUBELLA*	SEVERE UNDERNUTRITION	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY
TOTAL TO DATE 1976**	11	0	3	1	62	18	99	6	0	0	31	0	14	0	18	1	2	3363	100
TOTAL TO DATE 1977	0	0	1	0	95	16	90	24	0	0	5	2	4	0	8	0	22	2738	107
TOTAL THIS MONTH	0	0	1	0	49	10	43	10	0	0	5	0	4	0	5	0	21	1496	51
ACADIA					2		3											8	
ALLEN																		2	
ASCENSION																		3	1
ASSUMPTION					1													11	
AVOYELLES																		3	
BEAUREGARD						1												2	
BIENVILLE																		3	
BOSSIER						1												12	
CADDO					1	3	8								3		4	113	2
CALCASIEU						1												81	
CALDWELL																			
CAMERON																			
CATAHOULA																		1	
CLAIBORNE																		4	
CONCORDIA																		3	
DESOTO																		6	
EAST BATON ROUGE					3		1	1							1			142	4
EAST CARROLL							4											2	
EAST FELICIANA																		1	
EVANGELINE															1		1	1	
FRANKLIN																		4	
GRANT											1							1	
IBERIA																		12	
IBERVILLE																		7	
JACKSON																		1	
JEFFERSON					14	1					2		1				4	53	7
JEFFERSON DAVIS																		9	
LAFAYETTE																		43	1
LAFOURCHE					1													11	
LASALLE																			
LINCOLN							1											16	
LIVINGSTON							1											2	
MADISON																		12	1
MOREHOUSE							1											12	
NATCHITOCHE																		14	
ORLEANS			1		10	2	8	1					1				9	520	24
OUACHITA							2											40	1
PLAQUEMINES							1	1										2	
POINTE COUPEE																			
RAPIDES					1		2				1							103	
RED RIVER																			
RICHLAND																		9	
SABINE															2			2	
ST. BERNARD					5													1	1
ST. CHARLES																		4	
ST. HELENA																		4	
ST. JAMES																		5	3
ST. JOHN							1											3	3
ST. LANDRY						1	4											12	2
ST. MARTIN																		15	
ST. MARY					2			1										3	
ST. TAMMANY					1													29	
TANGIPAHOA							1											13	
TENSAS																			
TERREBONNE								1									2	9	
UNION																		8	
VERMILION																		7	
VERNON					8		2	1			1							39	1
WASHINGTON																	1	10	
WEBSTER							3	3										25	
WEST BATON ROUGE																		17	
WEST CARROLL																			
WEST FELICIANA																		21	
WINN								1											
OUT OF STATE																			

* Includes Rubella, Congenital Syndrome

**Preliminary figures

SELECTED REPORTABLE DISEASES

(By Place of Residence)

STATE AND PARISH TOTALS	ASEPTIC MENINGITIS	DIPHTHERIA	ENCEPHALITIS	ENCEPHALITIS, POST INFECTIONOUS	HEPATITIS A AND UNSPECIFIED	HEPATITIS B	TUBERCULOSIS, PULMONARY	MENINGOCOCCAL INFECTIONS	PERTUSSIS	RABIES IN ANIMALS	RUBELLA*	SEVERE UNDERNUTRITION	SHIGELLOSIS	TYPHOID FEVER	OTHER SALMONELLOSIS	TETANUS	MEASLES	GONORRHEA	SYPHILIS, PRIMARY AND SECONDARY
TOTAL TO DATE 1976	16	0	5	3	117	34	134	15	1	0	70	4	17	0	21	1	18	4969	166
TOTAL TO DATE 1977	0	0	2	0	161	33	143	42	0	1	8	2	11	0	14	1	55	4150	144
TOTAL THIS MONTH	0	0	1	0	66	17	53	18	0	1	3	0	7	0	6	1	33	1410	41
ACADIA					2		1										1	13	
ALLEN																		2	
ASCENSION					2		2											1	
ASSUMPTION					1												1	5	
AVOUELLES																		8	
BEAUREGARD																		4	
BIENVILLE							1											4	
BOSSIER																	2	15	
CADDO					7	2	13										1	116	6
CALCASIEU					3	1	1	1			1							87	2
CALDWELL																			
CAMERON																		1	
CATAHOULA							2												2
CLAIBORNE							1												3
CONCORDIA																			5
DESOTO																			5
EAST BATON ROUGE							1												
EAST CARROLL					6										3		2	119	5
EAST FELICIANA																		14	
EVANGELINE																			1
FRANKLIN																			5
GRANT																			1
IBERIA					1														5
IBERVILLE																			13
JACKSON																			
JEFFERSON					16	3	4	5			2		4		1		12	50	3
JEFFERSON DAVIS					1													2	
LAFAYETTE								1										37	2
LAFOURCHE								1										16	2
LASALLE																			
LINCOLN																			23
LIVINGSTON					1														
MADISON																			18
MOREHOUSE																			9
NATCHITOCHES																			5
ORLEANS					6	9	8	7					2		2		6	511	13
OUACHITA					2		11												58
PLAQUEMINES							1										1		3
POINTE COUPEE																			2
RAPIDES					1		1			1									66
RED RIVER																			
RICHLAND																	1		
SABINE			1			1													8
ST. BERNARD					1								1						4
ST. CHARLES																	5		5
ST. HELENA																			4
ST. JAMES																			6
ST. JOHN					1														4
ST. JOHN					1														1
ST. LANDRY					2	1													9
ST. MARTIN																			3
ST. MARY					1														3
ST. TAMMANY					2			1											10
TANGIPAHOA					1		1												18
TENSAS																			
TERREBONNE					2			1											9
UNION							1												6
VERMILION								1											6
VERNON					3														31
WASHINGTON					1												1		21
WEBSTER					2		3												6
WEST BATON ROUGE																			2
WEST CARROLL					1														1
WEST FELICIANA																			13
WINN							1												9
OUT OF STATE																			3

* Includes Rubella, Congenital Syndrome