

Dieldrin Contamination of Milk by Use of Second-hand Bags for Feed

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In September, 1968, milk from seven dairies in Tangipahoa Parish was condemned by the Louisiana Department of Health because of excessive residues of dieldrin. The dairies were all on the same milk route. On retesting early in October three of the dairies were found within tolerance and released. Milk from the other four remained contaminated for several months.

Feed seemed to be a likely source of contamination, but, while many of the dairymen obtained feed from the same source, not all milk contained dieldrin. Extensive sampling of all feed outlets in the area failed to locate the source of contaminant. Testing of forages, hay, water, soil, cleaners and sanitizers, etc., likewise, was unproductive. It was decided to continue weekly monitoring of the affected milk for the dual purpose of determining elimination period and detection of any seasonal or erratic source of residues.

Pesticide residue determinations were made by extracting the samples by conventional methods and subjecting the extracts to GLC. The gas chromatograph was equipped with a five feet by 1/8 inch o.d. glass column packed with 5% DC 200 on 80/100 mesh Gas Chrom Q and a Tritium detector. The detector, oven, injection port temperature were operated at 185°C using nitrogen as a carrier gas.

Results of this monitoring are given in Table 1. In the interest of saving space, only those values which reflect changes in status of the residue levels are given. In the first episode, nine to thirty-one weeks were required to recover from levels of 0.5 to 1.5 ppm dieldrin. This is from the time of first sampling and not from initial contamination. In the second case, six to eight months were required for the milk to clear up.

The last of the milk cleared up on April of 1969, but later in the month a sharp rise in dieldrin was noted. A check with the dairymen showed no change in practices. A sample of cottonseed meal from one of the dairies in late May showed 0.4 ppm aldrin. Two later samples showed 8.7 and 7.1 ppm aldrin. It was possible

to trace the meal back to the dealer and to the producer. However, thorough checking of the oil mill revealed no source of contamination. As a final resort the burlap bags in which the cottonseed meal was packaged were tested and found to contain aldrin. This mill customarily used new bags but near the end of the

TABLE 1 Dieldrin Residues in Milk from Tangipahoa Parish

Date Dairy	Dieldrin Parts per million, fat basis			
	AF	BP	CB	DK
9/26/68	0.50	0.56	0.67	1.45
10/15	0.49	0.38	0.55	0.54
11/8	0.45	0.35	0.47	2.18
11/22	0.41	0.29	0.40	1.06
11/27	0.27	0.20	0.28	1.01
1/17/69	0.26	0.12	0.12	0.68
2/12	0.12	0.09	0.07	0.31
3/12	0.12	0.06	0.04	0.31
4/1	0.11	0.05	0.07	0.25
4/17	0.17	0.14	0.07	1.06
5/1	0.26	0.11	0.53	1.25
6/4	4.21	3.59	3.49	4.21
6/18	4.31	1.55	3.49	8.48
8/1	2.96	2.11	3.16	1.88
9/11	0.41	0.29	0.69	1.12
10/23	--	1.44	0.72	0.77
11/20	1.08	0.42	--	0.53
1/15/70	0.52	0.24	0.22	0.27
2/27	0.27	0.14	0.11	0.23
5/1	0.11	0.07	0.05	0.24
9/18	0.07	0.05	0.04	0.08
11/20	0.03	0.04	0.03	0.03

crushing season had exhausted its supply and used secondhand bags, some of which had previously been used for rice seed treated with aldrin. The fact that this mill did not ordinarily ship into the milkshed lessened the extent of contamination but made the source more difficult to detect.

Analysis of bags used for treated rice seed is given in Table 2. Obviously the bags carry considerable amounts of aldrin. To test the actual transfer from bag to feed, samples of dairy feed were placed in contaminated bags. The results are given in Table 3. Aldrin in significant amounts is absorbed from contaminated bags. The reconditioning and reuse of burlap bags is widespread; any given lot may contain bags that have a widely different history. In Table 4 are analyses of bags taken from several reconditioning plants in Louisiana.

TABLE 2

Residues in Burlap Bags Used for Treated Rice Seed

Laboratory Number	Parts per million	
	Aldrin	Mercury
52X	4,822	18
53X	3,338	13
54X	2,148	24
219X	39	1

TABLE 3

Transfer of Aldrin from Contaminated Bags to Feed

Sample	Aldrin ppm	
	Bag 1	Bag 2
Feed Bags	845	39
Dairy Feed	<0.01	0.01
Dairy Feed - 5 minutes contact	0.05	0.03
Dairy Feed - 2 weeks contact	6.7	0.77

TABLE 4

Pesticide Residues in Reconditioned Burlap Bags

Sample Number	Parts per million		
	Aldrin	Dieldrin	DDT*
218X	845.0		
219X	39.0		
376X	5.0		1,783
377X	261.0	32	59
378X	137.0	10	4
379X	10.0		
380X	68.0	4	2
381X	7.0	2	4
382X	3.0		3
383X	0.2		
384X	0.2		

*Includes related compounds

Since this study was completed, we have investigated a case of excessive dieldrin residues in laying hens. In the latter case, meat scraps had been contaminated by use of second-hand rice seed bags. The feed industry should be particularly careful about reuse of bags.