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Medical Department

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National Silo Association
Meeting--Houston

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Marsh Wagner and I talked to Dr. Phil Santmyer today to learn what he picked up at the Silo Association Meeting in Houston on Wednesday. Phil's early comments of a general nature indicated that the meeting was a "wash out". There were 42 people in attendance at the beginning of the morning session and 48 before it finished.

The only paper relating to PCB was that presented by Dr. Hill. Santmyer's evaluation was that Hill's data were sketchy and that Hill felt that he was "walking on thin ice" and knew it (Phil further said, "Hill feels he may have stirred up a rat's nest that may cost him his job"). Hill pointed out that there was a lot of talk in Ohio concerning contaminated milk and he wanted to emphasize that "not all milk in Ohio was contaminated."

He then pointed out that the State Department of Agriculture monitors all milk for pesticides. Milk from 34 herds showed residues which did not fit into the typical DDT in pesticide chromatograms. Hill's department finally identified the unknowns as Aroclors.

He did say that as far as he knew there was only one formulation involved and that this was identified or labeled "Ohio Cumar".

He pointed out that Ohio milk laws were more strict than federal laws and were more easily enforced.

He returned to the subject of Cumar coatings stating that samples they had tested indicated the Ohio Cumar contained 26% of Aroclor. Flecks of the coating showed 64 ppm; ensilage showed 0.2 ppm in the center of the silo; and 20 ppm in the silage against the coated wall. Taking an unrevealed number of random samples from the ensilage showed an average of 1.3 ppm. Meat from one herd showed 1.85 ppm with no discussion of what meat this was, whether it included fat, was dry weight, etc.

MONS 099543

Mr. W. B. Papageorge
December 14, 1970
Page Two

When Hill's department drilled into the concrete of a silo, they found at a depth up to 1/2" 2,400 ppm of Aroclor. There was no mention made as to whether the sample might or might not have included the coated surface itself or whether this actually represented solely penetration of the Aroclor into the interior of the concrete.

Hill showed a slide indicating data from eight herds which had been checked. The data were as follows:

<u>ppm PCB in</u>			
<u>Herd</u>	<u>Silo Coating</u>	<u>Ensilage</u>	<u>Milk</u>
A	5,100	115	
B	--	25	See comments
C	--	33	in paragraph
D	2,500	2.2	below
E	3,500	5.6	
F	13,500	125	
G	6,400	--	
H	6,400	--	

There wasn't an opportunity for Phil to get the ppm indicated in milk for each herd, but he said the concentrations ranged from 1 to 2 ppm.

Dr. Hill continued by pointing out that milk had been rejected if it contained more than 0.2 ppm PCB. He mentioned that they had attempted a study on how long it took a herd to rid itself of PCB. A herd which had 2.0 ppm PCB in milk in April took until September to produce milk with 0.1 ppm. This was demonstrated in a slide which may have been made from sketchy data but showed long "residence time". Dr. Hill pointed out that it took longer to get rid of PCB than DDT. He said the PCB had been identified by gas chromatograms as Aroclor 1254 and showed chromatograms demonstrating the early confusion with DDT peaks.

Santmyer thought there still could be confusion because of the proximity of the 1254 peaks with the position of the DDT metabolites.

Hill said that the PCB had first been found last February and that the Ohio department first published a "paper" on the subject in September (I presume this may have been Hill's reference to the fact that he pointed out to you that they had made some notification to dairymen of the problem about that time).

Hill emphasized again that the coatings were not epoxy coatings and that it was not "Cumar" but was "Ohio Cumar".

He mentioned that the silos had been treated in 1967. This pretty much concluded his prepared remarks which Santmyer classified as "not well prepared and with data that were not clear cut".

In the next paper Tom Vadikin presented nothing but an advertising message for his company. He emphasized that he can clean silos of all contaminants and put on non-contaminating surfaces.

Wally Maceman then presented what Santmyer classified as a "good paper" although it was not of a technical nature. It dealt principally with customer complaints and carried the message that suppliers of coating ingredients do not provide enough information to people applying silo coatings. He mentioned that the majority of complaints related to penetration of moisture through the coating; cases of applicator employees becoming ill when applying the coatings, etc. and no reference to PCB's or Aroclors.

He suggested that the FDA should develop an approved list of coating materials and components for silo use. He recognized that this would probably require a great deal of experimentation. He thought the suppliers should provide test data to lead to FDA approval and he pointed out that in his opinion "suppliers should assume liability for any problems arising from the use of coatings." He asked Santmyer specifically if this related to the silo coating applicator who is "supplying the coating" or to the basic manufacturers who supply ingredients. Santmyer responded that there was the clear implication that the suppliers of the basic materials should assume liability.

Maceman did point out that there were three types of coatings that have not presented any difficulty. These included cured cement (?), epoxy coatings and urethane

coatings. Santayer wondered personally whether there was evidence that there were no problems with the urethane coatings.

The fourth panel participant was George Whitesides and he was recommended by Santayer as one with whom we might try to cooperate. Whitesides mentioned that there were more than 1,000,000 silos in the United States constructed at a cost of \$1,000,000,000. He pointed out that silos do have to be coated and he classified the problems into two categories. One related to the original construction of a silo when, 1.) curing coating compounds can be used to impregnate the surface and, 2.) surface coatings can be applied to the original silo which should last for eight to nine years if proper materials and proper methods for application are used.

The second category related to the maintenance of coatings and the replacement of deteriorated coatings after eight to ten years. He pointed out some of the problems with maintenance and the logistics of having silos empty for maintenance and resurfacing purposes, etc.

Whitesides expressed the opinion that silo manufacturers must assume some responsibility for coating problems. He pointed out that with some 30 years experience, silo manufacturers are saddled with the idea that coating problems "could be swept under the rug". He proposed that the industry set up subcommittees on the problem of building, maintenance and treatment of silos.

In the question and answer period, there were only three questions.

The first one, directed to Dr. Hill, was "How do you know PCB's are poisonous"? Hill replied that the FDA guidelines established this fact and the limit of allowable contamination.

The second question related to the difference of coefficient of expansion between epoxy coatings and concrete. The answer suggested that this was not a serious problem.

The third question, again addressed to Dr. Hill, was "Has legal action been taken in Ohio because of the PCB in milk, and if so, against whom"? Hill replied that there were two suits which had been filed by two herd owners, one for \$105,000 and the other for \$200,000. He did not answer the second part of the question.

Mr. W. B. Papageorge
December 11, 1970
Page Five

He finished with comments that the Ohio Department of Agriculture has worked very satisfactorily and cooperatively with Union Carbide, Dow, Wyandotte and Monsanto Companies.

Phil Santmyer is to send me an invoice for his expenses which I will forward to you.

Elmer P. Wheeler

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