THE PENNSYLVANIA STATE UNIVERSITY U. S. DEPARTMENT OF AGRICULTURE

MIFFLIN COUNTY
AGRICULTURAL EXTENSION ASSOCIATION
7 W. FLEMING AVENUE
LEWISTOWN, PENNSYLVANIA
PHONE: LEWISTOWN 248-9618

January 9, 1964

Dr. Robert Kehoe
Professor of Industrial Medicine
College of Medicine
University of Cincinnati
Cincinnati, Ohio

Dear Doctor Kehoe:

In follow-up of our conversation earlier today I am giving you what I can from memory of various reports. Since I would be several weeks rounding up official reports from various sources, what I report will be substancially correct even though not necessarily put in proper medical language. I will indicate what kind of report could be gotten if necessary to substantiate this preliminary review of findings to date.

Some time ago, earlier than 18 months and no more than 36 months, a battery reclaiming operation complete with lead smelter was added to a salvage operation involving steel and the smelting of brass. These two operations had been functioning for several years previous to the lead smelter.

James Noerr farms about 300 acres in crops and pasture primarily to feed a large (55 cows) dairy herd. Some of this land is within a few hundred yards of the smelter both to the east and west. The furtherest fields are within 1½ miles to the west and 2½ miles to the east with a prevailing westerly wind. There are, however, days when easterly winds carry enough fumes to the buildings (about 1¼ mile to the west) to make it unpleasant to be outside. This farmland and the smelter are situated in a narrow valley roughly a half mile wide with a mountain rising about 500 feet on the north and one on the south rising about 1200 feet.

During the fall of 1962 a number of cows became mysteriously sick with most of them looking out of sorts or piqued. After several weeks of treatment by the local veterinarian the veterinarian requested the assistance of the Extension veterinarian. In all 4 cows (recently dead or dying) were posted by the Pennsylvania Livestock Disease Diagnostic Laboratory at Penn State. Several veterinarians including Dr. Kradel in charge of the laboratory and Dr. William Adams, Extension veterinarian, participated. Colored movies of clinically afflicted cows were taken showing typical textbook symptons, including twitching, loss of coordination, leaning for support and walking into posts, circling, etc.

Upon posting serious brain inflamation and lesions were obvious. Further tests proved eosinophilic meningo - encephalitis. At this time no one suspected lead.

Various feed samples were tested for unusual urea levels, prussic acid, etc. The tenative conclusion that this eosinophilic meningo encephalitis, may be caused by some unidentifiable virus.

This fall in early November when the first clinical symptoms showed up the owners raised the question of lead. In the meantime Dr. S. B. Guss, Extension veterinarian who had been on leave of absence in Europe during last winter had returned. He immediately called it lead poisoning and ordered kidneys, that had been frozen and preserved from last years posting, sampled and tested for lead. The two kidneys were tested by a reputable private labortory and 4 mg and 6 mg of lead was found in each 100 gram sample. These levels were enough to convince Dr. Guss that, along with all the other symptoms, lead poisoning was the problem. Shortly thereafter samples of milk and blood taken from 52 cows were delivered to Phipps Institute at Philadelphia and none of us have influence enough to expedite their testing.

Almost concurrently samples of silage, hay and mixed grain were sampled and tested compartively against similar samples taken out of University supply presumed to be uncontaminated.

These samples were ashed by Dr. John W. Bratzler, Professor of Animal Industry, P.S.U., a specialist in animal nutrition and experienced in ashing feed samples for spectroscopy. The samples were run by Norman H. Suhr, a specialist in spectroscopy attached to the College of Mineral Industry, P.S.U. I have no doubt as to the validity of these samples. The control sample of silage showed 1.8 ppm the Noerr sample 132.6 ppm. The composite grain sample taken as fed (2/3 of mixture produced on the farm) showed .4 ppm for control, 5.4 ppm for Noerr sample. The hay control showed .6 ppm and the Noerr hay showed 3.8 ppm.

Discontinuing the use of the silage was followed by an almost immediate remission of clinical symptoms with hardly any symptoms noticeable two weeks later. Now about a month after discontinuing silage feeding a cow is in serious condition following parturition 3 days ago.

A composite milk sample was taken from the bulk tank Monday and tested Tuesday by Mr. Suhr with the report of no lead -- if any, under .06 ppm. It is possible that the filtration and ashing procedures might not have been valid though it is reasonable to presume if significant lead had been present some would have been found.

The Noerr son, Tim, aged 4, has submitted a urine sample to Dr. Eleanor Aurand our local Pediatrician which has been sent to California for analysis.

Silage samples would be easily available. Composite milk and or blood samples could be forwarded to you. Rumen content, kidneys and other items from last years posted cows are stored frozen at the Livestock Diagnostic Laboratory at State College and could be forwarded to you. Kidney, etc. samples can be provided from the cow currently down. One small, inefficient farmer is the only other farm in close proximity to this plant. We might conceivably be able to get a hay sample from him without alerting him. Foliage samples collected from fields at this time would be washed virtually clean by rain, snow and sleet in recent weeks. Feed harvested each of the past two summers was grown under drought conditions and foliage was exposed to very little rainfall.

The Noerr's have a ½ acre farm pond at the buildings 1¼ mile removed to the west might have a buildup of lead in the mud or in the fish that have been raised in this pond.

The fact that a near neighbor (1 mile west of the plant) has dark spot problems with the finish on her white car which she attributes to fumes from the plant may or may not be related to the problem.

If there are any other possible samples that might tie the lead on the foliage to stack discharge please suggest and we will try to forward.

Until January 20th I will be out of town at the State Farm Show in Harrisburg. If you need anything before then please call James Noerr, Lewistown, Pa. Area Code 717-543-5607 collect. My office number is Lewistown, Pa. 717-248-9618, collect.

Sincerely yours,

Clair D. DeLong

Clair D. DeLong
County Agent

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KETTERING LABORATORY
COLLEGE OF MEDICINE, UNIVERSITY OF CINCINNATI
EDEN AVENUE, CINCINNATI, OHIO 45219

Material: Two samples of corn, one sample of alfalfa, and a sample of sudan sorghum hybrid.

Submitted: August 24, 1964 by Dr. R. A. Kehoe for Mr. Clair D. DeLong, County Agent, Mifflin County, Agricultural Extension Association, 7 W. Fleming Avenue, Lewistown, Pennsylvania

Required: Determination of the content of lead

Results

Analysis Number	Description of Sample	Grams Used for Analysis	Mg. of Pb in Sample	Pb PPM
64A-4538	Corn - Gerehard Farm	284.7	0.341	1.20
64A-4539	Corn across from Goss	246.1	0.152	0.62
64A-4540	Sudan Sorghum Hybrid	333.1	0.227	1.11
64A-4541	Alfalfa	99.5	0.047	0.44

Interpretation

The concentration of lead in these samples of vegetation is such as to indicate that they have been contaminated slightly and (presumably) externally, with lead. The contamination is very little more striking than it is found often to be in samples of vegetation which are analyzed without being washed to remove finely divided soil or any other foreign material. Indeed, two of the samples (#2 and #4 in the sequence) have not certainly been contaminated.

Signed: Robert A. Kehoe

Robert A. Kehoe, M.D.
Director

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