**SOUND AGRICULTURAL PRACTICE**
**Opinion Number 94-1**

**SUBJECT:** **Request for an opinion pursuant to Section 308 of the Agriculture and Markets Law as to the soundness of certain agricultural practices conducted on the Danielewicz Farm located at 3071 Youngstown Road, Town of Wilson, Niagara County.**

**REQUESTOR:** **James J. Devald, P.E.**
**Director of Environmental Health**
**Niagara County Health Department**
**5467 Upper Mountain Road**
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## Preliminary Statement

In a letter received by the Department, dated October 22, 1993, Mr. James J. Devald, Director of Environmental Health for the Niagara County Health Department, requested an opinion, pursuant to Section 308 of the Agriculture and Markets Law, on the soundness of agricultural practices conducted on Mr. Flevie Danielewicz's Farm. The farm is located at 3071 Youngstown Road in the Town of Wilson, Niagara County. Mr. Devald requested that the Commissioner issue an opinion as to the soundness of the manure management system used on Mr. Danielewicz's dairy farm. The Health Department has received a number of complaints from the public with regard to odor associated with the management of manure on the subject farm.

Pursuant to this request, the Department advised Mr. Devald in a letter dated December 9, 1993 that the Department would conduct a sound agricultural practice review of Mr. Danielewicz's animal waste management practices with regard to odor. Sources of manure odors considered in the Department's review include livestock facilities, a liquid manure storage lagoon, and land spreading/application practices. On January 18, 1994 Mr. Matt Brower, Mr. Dave Dodge, and Dr. Robert Somers visited Mr. Flevie Danielewicz's farm to gather information on the manure management system used on the dairy farm. Mr. Danielewicz conducted a tour of the facility and answered a series of questions related to his manure management practices and the control of odor associated with the land spreading of lagoon stored manure and other wastes associated with the farm's milk house and livestock confinement operations.

## Information Considered in Support of the Opinion

1. The Danielewicz's farm is located in three separate Towns. The farm located in the Town of Cambria consists of the family's homestead and approximately 1400 acres of owned and rented land. This portion of the farming operation is used

to raise crops and replacement heifers for the dairy operation. In 1993 approximately 500 acres of corn, 200 acres of wheat, 200 acres of hay, 100 acres of USDA annual set-aside land, and 500 youngstock were grown/raised on the farm. The manure management system employed on this farm was not examined since it was not identified by Mr. Devald as being a source for complaints.

2. The farming operation under review is the dairy located approximately 12 miles north of the previously described homestead and farm and approximately 1 1/2 miles southwest of the Village of Wilson. The Danielewicz's have owned this farm for approximately 22 years, but built the free-stall barn and the milking facility approximately five years ago. This farm includes 1600 acres of owned and rented land in the Towns of Wilson and Porter. The farm is used for crop production and houses the milking herd and dry cows. In 1993, this portion of the operation consisted of approximately 700 acres of corn (350 acres of which was used for silage), 300 acres of wheat, 400 acres of hay, 200 acres of USDA annual set-aside land, 500 milk cows, and 100 dry cows. The milking herd is kept in a five-year-old free-stall barn and the dry cows are kept in an older barn that has been converted to a loose housing facility. The dairy farm is located within Niagara County's Agricultural District Number Eight (8).

3. The soils on the dairy farm are predominately Appleton (Fine-loamy, mixed, mesic Aeric Ochraqualfs), Ovid (Fine-loamy, mixed, mesic Aeric Ochraqualfs), Rhinebeck (Fine, illitic, mesic Aeric Ochraqualfs), and Niagara (Fine-silty, mixed, mesic Aeric Ochraqualfs) silt loams which have a capability rating of IIIw. This rating indicates that these soils have a severe workability limitation due to wetness. In general, the permeability of the subsoil is slow and the depth to the seasonal high water table is one-half to one-foot below the surface. Mr. Danielewicz indicated that almost all of the fields where manure is applied are tiled to improve drainage. However, in the spring these soils do not dry out sufficiently to safely support the operation of heavy farm machinery until late April to mid-May.

4. Two forms of manure, both solid and liquid, are generated on the farm. Manure from the loose housing facility is handled in a solid form. The barn is cleaned once a month and the manure is spread onto the soil surface of adjacent fields using conventional manure spreading equipment. It does not appear that the complaints are a result of the handling and land spreading of manure in a solid form. The second form of manure is in a semi-solid to liquid state. This material is stored in an excavated lagoon located adjacent to the free-stall barn.

5. Mr. Danielewicz told Mr. Brower that in general, manure generated on the farm is managed as follows. Manure in the free-stall barn is scraped twice a day into a pit located at the north end of the barn. Every other day the manure is pumped from

the pit to a storage lagoon through an underground pipe. The manure is stored in the lagoon until it is land spread. At the time of spreading, the manure is agitated and pumped into a 5000 gallon tank spreader. The manure is applied onto the soil surface of adjacent fields as a liquid using the tank spreader and a large farm tractor. Mr. Danielewicz estimated that manure is spread approximately 1000 feet from the nearest residence when left on the surface and 600 feet when incorporated into the soil. Mr. Danielewicz told Mr. Brower that the rate of manure application is not monitored and that he covers the ground with the material. Mr. Danielewicz told Mr. Brower that normally, the liquid manure is left on the surface and not immediately incorporated into the soil.

6. The manure lagoon was designed by the USDA Soil Conservation Service in 1988. The lagoon was designed to store the manure from 500 cows for up to one year. According to Mr. Ed Oliver, the SCS District Conservationist stationed in Lockport, the design of the lagoon was approved by Mr. Don Lake, the SCS State Conservation Engineer located in Syracuse, New York. SCS personnel inspected the construction of the manure storage lagoon. According to Mr. Oliver, the completed lagoon met SCS's design standards. The lagoon is located approximately 800 feet from the nearest off-farm residence. At the time of the field review, the lagoon appeared to be in good condition with no apparent leaks. A crust existed over most of the lagoon and the only area not crusted over was a small area located directly above the outlet of the pipe used to fill the lagoon. The lagoon was approximately half-full and the pipe used to fill it was not visible. The piece of equipment used to agitate and pump the manure was still in the lagoon and it appeared that the manure was pumped from below the crust.

7. Mr. Danielewicz informed Mr. Brower that his first odor complaint was registered in 1991 by Ms. Michelle Fitch. At that time, manure was being incorporated into the soil using a piece of injecting equipment. Mr. Danielewicz told Mr. Brower that Ms. Fitch, neighbors, and Town officials were given a tour of his facilities where he explained his dairy operation and manure handling system. Since that time, the use of the manure injecting equipment has been discontinued because it is slower, uses more fuel, and odor complaints were received after its use. Mr. Danielewicz informed Mr. Brower that his next odor complaint resulted from manure being applied for seven to ten days in late July and early August, 1993. He stated that liquid manure was spread on approximately 80 acres of wheat stubble. The manure was applied at this time because the lagoon was full and additional storage was needed. Mr. Danielewicz informed Mr. Brower that in the fall of 1992 and the spring of 1993, soil conditions were too wet for manure spreading and once the soils were dry enough in the spring to support farm machinery the crops needed to be planted. Mr. Danielewicz told Mr. Brower that it was hot and humid when the manure was spread during the summer of 1993 and the manure was not incorporated into the

soil until November, 1993. It was Mr. Danielewicz's opinion that the spreading of manure onto this field would not be a hindrance to anyone since the 80 acre field was located adjacent to woodland and away from nearby residences. Mr. Danielewicz told Mr. Brower that in September, Town officials notified him of their receipt of manure odor complaints.

8. Mr. Danielewicz informed Mr. Brower that liquid manure was land spread in November, 1993 and chisel plowed immediately into the soil to help reduce odors. Mr. Danielewicz stated that the climatic conditions were optimal and the soils were dry. Mr. Danielewicz told Mr. Brower that he was not aware of any odor complaints being registered for the land spreading of manure during November, 1993.

9. According to written reports from the Niagara County Department of Health, their first manure odor complaint was received on July 10, 1989 from Mr. David Hazen, who resides as 3253 Youngstown Road. The complaint concerned odors emanating from the lagoon on the dairy farm. The Niagara County Health Department representative visited the facility on July 11, 1989 and noted a slight odor while standing adjacent to the lagoon, but could not detect any odor while standing in the general vicinity of the complainant's residence. On August 10, 1993, Mr. Hull (address not provided) contacted the Niagara County Health Department to complain about manure odors emanating from the Danielewicz's dairy farm. Additionally, the Health Department received separate manure odor complaints from Mr. Jerome Brett (3100 West Lake Road) and Mr. Nicholas Alexander (3119 West Lake Road) on August 12, 1993. On August 13th Mr. Joseph Baronich, a representative from the Niagara County Health Department arrived in the vicinity of the Danielewicz farm and wrote in the inspection report that he could not detect any odor, either upwind or downwind from the farm. On August 16th another representative of the Health Department, Mr. Jack Landrigan, visited Mr. Alexander's residence and reported in the inspection report that no odors were detectable. On August 14, 1993 the Health Department received a call from Mr. A. J. Sporleader, a Town Board Member, concerning the odor issue. On August 27, 1993 Ms. Patricia M. Powell, Public Health Director for Niagara County received a letter from the Honorable Joseph T. Pillittere, Member of the Assembly representing the 138th District concerning the Danielewicz odor issue. Mr. Pillittere received a letter from a constituent, dated August 19, 1993, complaining about manure odors from the Danielewicz farm. Mr. Charles and Mrs. Peggy Tamborello, residing at 2843 Lake Road, requested his assistance in resolving this issue. The Health Department inspection reports do not state whether or not Mr. Danielewicz was notified of the complaints.

10. In separate phone conversations, Mr. John Spagnoli, Regional Director of Region 9 for the Department of Environmental Conservation and Mr. James Devald, Director of Environmental Health for the Niagara County Health Department, informed

Mr. Brower that they have not cited Mr. Danielewicz for any violation(s) of either the State Public Health Law or the New York State Environmental Conservation Law.

11. According to correspondence from Nathan Herendeen, Area Extension Specialist, to Mr. Harold Mosher, Supervisor of the Town of Wilson, dated October 4, 1993, Mr. Herendeen met with Mr. Danielewicz on September 29, 1993 to discuss manure management and odor issues. In the letter to Mr. Mosher, Mr. Herendeen stated that odor can not be completely eliminated, but methods are available to reduce odor to an acceptable level. Mr. Herendeen stated that he examined Mr. Danielewicz's farming operation and discussed odor reduction, manure management, and nutrient management methods/possibilities with the landowner. Mr. Herendeen prepared an outline for a possible manure management plan, attached to the October 4, 1993 correspondence, and stated that the plan should be flexible enough to allow for weather limitations, mechanical break downs, and human factors. Mr. Herendeen examined Mr. Danielewicz's feed storage facilities, animal housing, and manure storage system. He concluded that it appeared "...that the facilities are being maintained and operated according to recommended practices. Manure is scraped from the animal housing area regularly. Spilled feed and manure are cleaned up so as not to become a breeding spot for flies. Farm equipment is well maintained and has the proper markings for highway travel. They are very careful about not spilling on the highway and scraping clean if there is a spill." Mr. Herendeen wrote that having only one tanker for manure application was a limiting factor since the "...fields could be plowed much faster than manure can be applied."

12. On January 24, 1994 Mr. Brower contacted Dr. Richard Koelsch, Senior Extension Associate for the Department of Agricultural and Biological Engineering at Cornell to discuss methods for the control of manure odors. Dr. Koelsch informed Mr. Brower that to effectively reduce odors, one should avoid the application of liquid manure during hot, humid weather. He also stated that injecting the manure into the soil or spreading the manure on the surface and immediately incorporating it will substantially reduce odors. Weather permitting, Mr. Herendeen suggested that surface applied manure should be incorporated into the soil within 12 hours. Dr. Koelsch stated that an anaerobic digester would be effective for controlling odors; however, a large capital investment by the farmer would be required. Dr. Koelsch told Mr. Brower that he was not aware of any research that proved that adding antiodor agents to manure helped control odors.

13. On March 21, 1994 Dr. Somers received information from Mr. Harold Mosher concerning the Town's involvement with Mr. Danielewicz and the odor issue. Mr. Mosher provided answers to a series of questions submitted to the Town by the Department of Agriculture and Markets. In answering the questions, Mr. Mosher stated that over a three-year period (1991-1993) four (4) representatives on the Town

Council spoke to Mr. Danielewicz about his farming practices and odor complaints. Mr. Mosher stated that the Town is dependent upon tourists, particularly during the summer, to sustain the business economy of the community. When asked specifically about the land spreading/manure odor incident in July-August, 1993, Mr. Mosher concluded that the odor "...forced neighbors to close windows, avoid outside activities, and sent tourists out of the area." According to a map provided by Mr. Mosher, the prevailing winds over the Danielewicz farm are oriented in a southwest to northeast direction and during Mr. Danielewicz's manure spreading activities in August of 1993, odors were being blown in the direction of the Town. Mr. Mosher indicated that a "statement of concern" petition from Town residents was received by the Town Board on August 16, 1993 regarding odors coming from the Danielewicz farm located on Youngstown Road. A copy of the petition was not provided to the Department. Town officials also indicated that there are no written reports or other documentation of their visits to the Danielewicz farm.

14. Mr. Danielewicz told Mr. Brower that alternatives were being evaluated to help reduce odors during the manure application process. Three alternatives were identified including adding antiodor agents to the manure, incorporating the manure immediately after its application, and using irrigation equipment to apply the manure more quickly in the spring prior to plowing and planting. Mr. Danielewicz informed Mr. Brower that a waste management plan had not been developed for the farm, but soil tests are conducted annually on a rotational basis with each field being tested approximately once every three years. Mr. Danielewicz told Mr. Brower that 200 acres have been enrolled in Agway's nutrient management program. This program was initiated to manage the use/cost of commercial fertilizer, not manure.

15. Ancillary data contained within the Ohio Livestock Manure and Wastewater Guide[1] and the Delaware Guidelines for Dairy Manure Management[2] indicate that a correct decision on when and where to spread manure will help eliminate odor nuisance. The following is related guidance provided by these two references.

(a) The farm operator must consider wind direction, distance to neighbors, and weather conditions prior to land spreading. For example, spreading in cold weather will create less of a nuisance than spreading in warm weather. Manure

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[1]Mike Veenhuizen. Ohio Livestock Manure and Wastewater Guide. Bulletin #604, Ohio State University. pp. 64-67.

[2]Dairy Manure Management. 1992. A Supplement to Delaware Guidelines-Manure Management for Environmental Protection. Mary Pritchard, editor. Delaware Cooperative Extension Bulletin #23. 43p.

spread on frozen or snow-covered ground, however, may increase the risk of water pollution due to runoff.

(b) If manure is spread on warm days, it should be spread in the morning rather than in the afternoon. As the air warms and rises, odors will rise and not travel along the surface of the ground.

(c) On turbulent windy days odors travel shorter distances, mix with the atmosphere, and become less detectable.

(d) Rain helps to remove odors from the atmosphere.

(e) It is not advisable to spread manure on calm, humid days.

(f) It is advantageous to minimize agitation and exposure of manure to air during unloading, hauling, and spreading since all of these activities have the potential to release odors.

(g) It is important to incorporate manure during or immediately after land application by injecting or plowing/disking the manure into the soil. When the manure can not be incorporated into the soil, it should be applied in a thin layer. The thickness of the spread manure is dependent upon forecasted weather conditions and its subsequent drying within five (5) or fewer days. Once dried, odors are greatly reduced and flies will not propagate.

(h) Well-functioning and maintained lagoons will emit little odor except for a short period during the spring when the liquid manure begins to warm-up.

(i) The suction inlet should be located near the bottom of the lagoon to prevent breakage of the floating crust that forms at the surface. The crust serves as a lid, keeping odors to a minimum.

## Conclusion and Opinion

Based upon the facts, information, and circumstances described above, and in consultation with the State Advisory Council on Agriculture; the New York State College of Agriculture and Life Sciences; the USDA Soil Conservation Service; and the Sound Agricultural Practices Guidelines by which agricultural practices are evaluated, I hereby conclude, pursuant to Section 308 of the Agriculture and Markets Law, that:

1. Waste management practices as observed in the free-stall barn and the milk house located on the Danielewicz farm, as they relate to odor control, are sound due to the operator's twice daily cleaning schedule and temporary manure storage at one end of the barn and the subsequent removal of accumulated waste by-products every other day by pumping the material in the holding pit to the lagoon through an underground pipe.

2. Liquid manure storage practices as observed on the farm are sound due to USDA Soil Conservation Service's approval, design, and inspection during construction of the manure storage lagoon. In addition, manure from the free-stall barn is discharged into the lagoon from a pipe located near its bottom, a crust is maintained on the surface of the lagoon to help control odors, and the suction inlet is located near the bottom of the lagoon to prevent the breakage of the crust.

3. The land spreading of liquid manure from the lagoon during late July and early August, 1993 was unsound because it was spread during hot, humid weather conditions and it was not incorporated into the soil immediately after application. It appears that no attempt was made by the landowner to abate or reduce odors during the land spreading operation conducted in July-August of 1993.

4. The land spreading of liquid manure from the lagoon during November, 1993 was sound because it was applied during cooler, less humid weather conditions and it was incorporated into the soil immediately after its application.

4-18-94
Date

Richard T. McGuire
Commissioner