

Maintenance Of Manure Structures

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Lax in operation

As a result, one thing was certain — many farmers were lax in the operation, maintenance, and safety of structures.

"If everything's going right, nobody ever says anything," said William J. Bowers, state conservation engineer, who helped write the report.

With the aid of conservation districts in each of the counties across Pennsylvania, the SCS study evaluated 99 manure storage facilities, including those with and without USDA/Soil Conservation Service (SCS) assistance.

"There needed to be an organized effort to look at structures that

of Soil and Water Conservation, focused in on the design and construction of the facilities and found very little wrong. Of 99 farms, only 7 percent were structurally amiss. But the thing that jumped out at the surveyors was the safety, operation, and maintenance of the facilities, according to Bowers.

"We found out a lot of things that are not being done as safely as they should be. And some of those things we need to correct," he said.

Of the farms surveyed, 34 percent were routinely filled above design depth, 22 percent had overtopped at least once, 49 percent had inadequate or no safety fences, and 51 percent had no safety gate or stop. Thirty-three percent with

that's probably not a concern," said Bowers, "other than the fact that they are that close, which means they need to be structurally sound and they need to be operated properly. If they are that close and they overtop on a regular basis, that's a concern."

Overtopping also concerns Frank Goodlander, who served on the project's steering committee that represented the Ag Advisory Committee to the DER.

"According to regulations, the facilities are supposed to have two feet of freeboard — in other words, you don't fill it completely, you have two feet that you don't use. In the study, they found that almost every one of them at one time or another overflowed."

Goodlander said that one of his concerns throughout the development of the study was the fact that many structures were built too close to water supplies. In the study, said Goodlander, about 20 percent of the facilities were located within 30 or 40 feet of water wells.

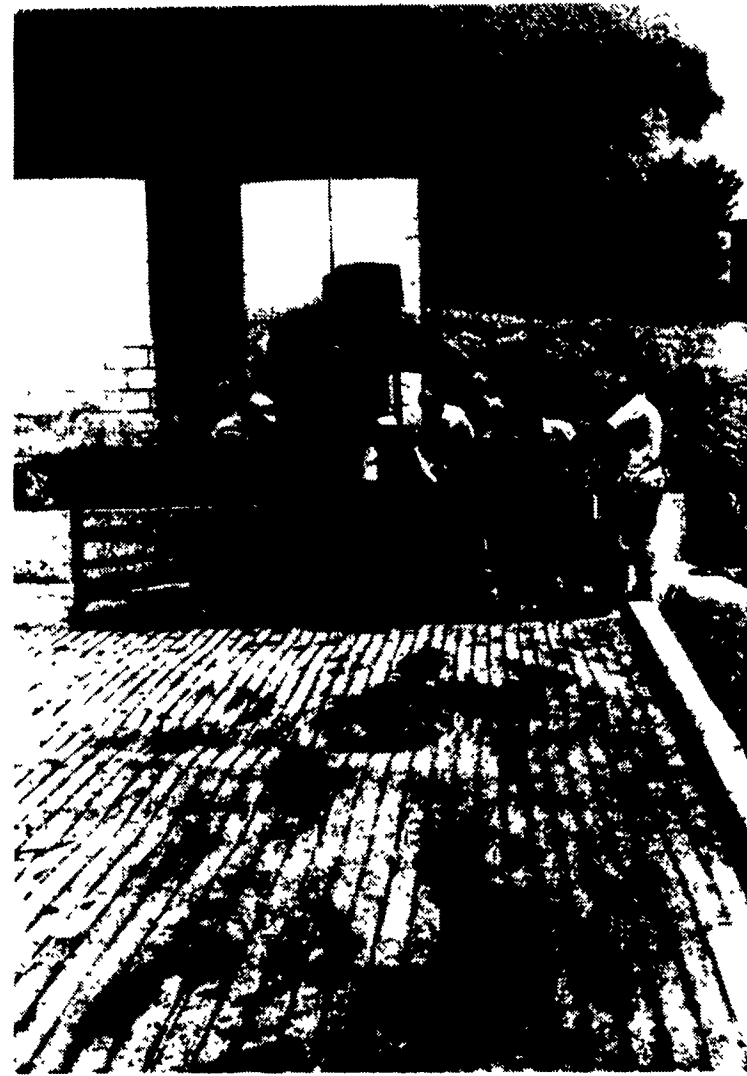
Needs follow-up

"My feeling is that they need to do a study on groundwater pollution as a result of these facilities," he said. "There will be something to come out of this as to a follow-up in order to correct some of the problems with safety and maintenance."

About nine storage facilities were located within 50 feet of a stream, according to the report. Twenty-five farms are reported within 200 feet of a stream. Approximately 51 percent of the manure storage facilities in the study are within 200 feet of a water source.

"I don't think you're going to get a manure storage facility farther away than 200 feet," said Robert J. Thompson, agricultural engineer with the Lebanon Co. SCS office, who analyzed the data and helped write the report. "And within your farmstead you're going to have a well, and if you're going to have manure storage, you're going to have a manure storage facility near your farmstead."

According to the SCS engineers, the type of facility constructed has a lot to do with its safety factor near water sources. A sealed concrete structure if constructed well will stand up to scrutiny within 50 feet of a water source.



Manure storage facilities were under scrutiny during a special manure tour held last summer. Several farmers peer down into a manhole-like opening at the Jay Brandt farm in Bachmanville. The gutter scraper is visible above their heads. The grooved cement in the foreground drains a helper yard not seen to the left, and keeps all manure and manure-contaminated drainage from going anywhere else but down the manhole, like a huge french drain. Photo by Vern Achenbach.

ce. But a manure storage pond needs to be well-planned, designed, built, and maintained if it is close to a spring, well, stream, or pond. The design is determined specifically for the needs of each farm, and the SCS can provide assistance to farmers in designing and constructing such a facility, according to Bowers.

"Whether we need to make regulations or specifications regarding distance, we don't know yet," said Thompson. "Maybe somebody else would take this and go make manure standards out of it and determine how far away."

"No one can come up with the magic number as to how far away these need to be," said Bowers.

Of the farms surveyed, 34 percent were routinely filled above design depth, and 22 percent had overtopped at least once.

Positive action

"A well-constructed, well-maintained pond or structure within 50 feet of a stream, if it's catching the barnyard runoff that got in the stream before, I think it's a very positive action that the farmer has taken," said Bowers.

According to SCS, several factors, such as manure ponds located in limestone ground or those located in shale ground with a hand-dug well have different requirements. "If you have a cast-in-place reinforced concrete structure next to a well that is cased 50 feet to bedrock, as far as I'm concerned, they could be side-by-side."

Bowers said that you "can't make a nice, neat chart" for how close different structures can be to water structures. But the fact that a high percentage of the structures are close to water at all is a big concern.

Need to be concerned

"I think farmers are in a position where they need to be very concerned that the structures don't pollute by leaking or by overtopping," he said.

Other concerns include plugging problems on gravity loading systems, such as dropping a bale of straw into the pipe system, or snow, ice, or dry manure clogging the system.

Goodlander and the Council itself will use the information published in the report and provide it to extension offices and farm representative agencies to educate the farmer about the importance of

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had been in existence over the years to see how they were performing," said Bowers.

Jumped out

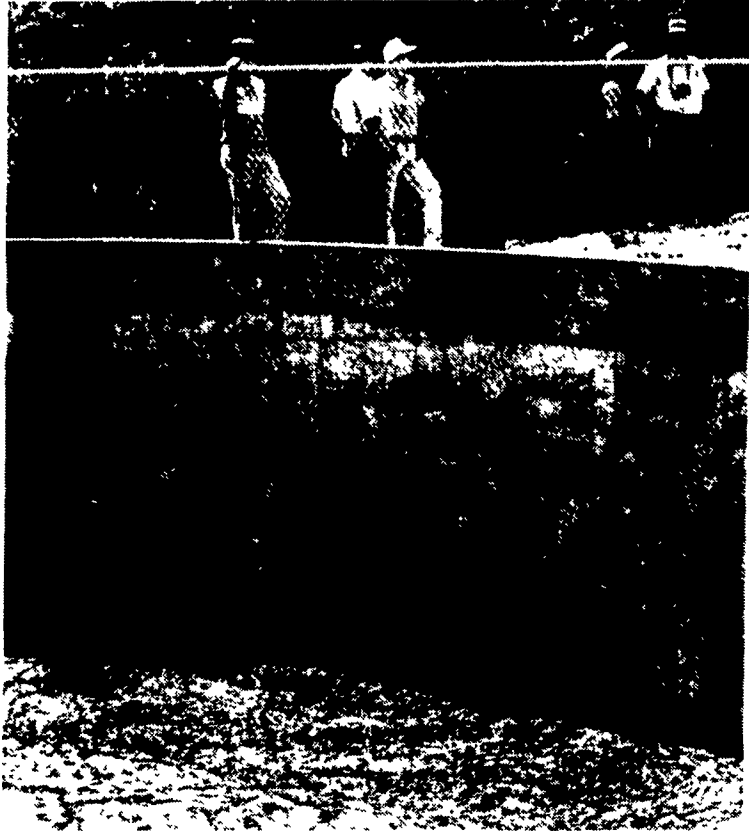
The study, funded by the SCS and the Department of Environmental Resources (DER) Bureau

outside lots did not control barnyard runoff.

And 51 percent are near a water source, which concerns SCS.

Operated properly

"If they are being operated correctly and are structurally sound,



Farmers can learn about the proper maintenance and operation of manure facilities, as they did during a special manure tour held in Elizabethtown last July. Here, the terminal end of the 200-foot underground pipeline at the Jay Brandt farm empties manure into this 12-foot deep storage tank. Photo by Vern Achenbach.

Minimize Safety Hazards

HARRISBURG (Dauphin Co.) — Many safety hazards can be minimized by proper design, construction, and operation of a manure storage facility.

The following procedures will help when building a storage facility and can be incorporated into existing storages:

- Keep in-barn pits for liquid manure to a minimum volume and divide pits into small compartments to reduce or eliminate the need for agitation.
- Locate pump-out openings for manure pits outside of buildings. Use heavy covers or grates for pit access points and keep them in place.
- Equip ventilation systems with an alarm to indicate power failure, and provide a backup ventilation system.
- Build railings for all walk-

ways on piers or walls along open manure storage structures. Push-off platforms or piers should have a barrier strong enough to stop a slow-moving tractor. If animals are to be on a pier, install a low guardrail to keep them from rolling into the pit if they slip.

• If the manure storage is outdoors, provide a gas trap or other device in pipes running to the storage to prevent gases in the storage structure from reentering the building, especially during pit agitation.

• Install a fence around open storages, ponds, treatment basins, and lagoons. The fence should be tight enough to keep out small children. Warning signs should be placed near open storages and above-ground tanks, and a rescue pole and rope should be located conspicuously in the area.



Frank Goodlander, like many farmers, is concerned about the maintenance of manure on his farm. Goodlander tends the beef helpers on his farm in Lewisberry. He served on the Ag Advisory Committee for the manure storage study.