Perhaps the most quoted, and misquoted, movie line of all time comes from the 1967 Paul Newman film, Cool Hand Luke. Luke (Newman) is put in chains for escaping from a prison farm. When he talks back to the Captain (Struther Martin), the captain knocks him down … then most folks remember the Captain saying with a halting, hick accent, “What we got here is a failure to communicate!”

But he doesn’t say that. What the captain actually says is, “What we got here is failure to communicate.”

The point is the captain is not angry over a single, specific case of failing to communicate, but Luke’s failure to do as he is told; generally and systematically. These lines of dialog can teach us something about systematic failures on the farm.

If you ask an angry farmer why he’s frustrated with manure handling, he’ll probably say something to the effect, “My storage pond fills up faster than it ought to,” or “I can’t get the tractor on wet fields to spread.”

They see the situation as one isolated problem. But, once they fix that one thing, chances are something else will go wrong next month.

They are failing to see manure handling as a system.

The frustration of watching farmers repeatedly getting punished for systematic failures led to creation of OSU Fact sheet BAE 1734, What is a Waste Handling System?

The fact sheet was revised during the summer of 2011. The core idea remains: “A system, by definition, is a set of interdependent components working together to perform a task. The components are interdependent because you cannot change one part of the system without affecting the other parts.”

The task of manure handling is to please three clients: the farmer, his neighbors and the environment. The manure handling system accomplishes this task using four basic components linked by material transfer operations as shown in Figure 1.

If properly designed, these simple, linked components make the system extremely flexible.

**Production**: Animals convert feed to feces and urine, but other byproducts are produced. Other inputs include: bedding, flush water, spilled feed, and runoff.

**Storage**: Storage is the system’s shock absorber. For example, storage allows the farm to temporarily hold material until the cropping cycle and field conditions are optimal for land application.

**Treatment**: Treatment components alter the volume or character of waste to improve handling, reuse, appearance or odor.

**The environment**: Manure is too valuable of a resource to throw away. Manure nutrients and organic matter are recycled to the environment. A properly designed system delivers these resources at rates which allow beneficial absorption into the environment.

**Material transport operations**: This transport, shown as arrows in Figure 1, is perhaps the most important part of the system. Material transport is a fancy way of saying moving stuff from one place to another. Transport operations serve as lines of communication tying the system together.

Notice that the arrows are double ended. This means material travels in both directions. For instance, manure moves from storage to the environment during spreading, but the environment can also send rain to fill the storage. Rainfall reduces storage, which increases the need for spreading … this is an example of the environment providing feedback to the system.

Managing the system becomes a matter of paying attention to the various feedback functions constantly taking place within the system.

Let’s use an example of a dairy farm with a storage pond that keeps filling up faster than it ought to.

![Figure 1. Simplified schematic of a waste management system, from OSU Fact sheet BAE 1734, What is a Waste Handling System?](image-url)
The farmer’s first reaction is to dig a bigger pond. By stepping back, and looking at the thing systematically; however, a number of potential causes of the pond filling too quickly appear, such as:

• Storm water falling on the milk barn roof runs onto the holding area;
• The milking machine wash water was not accounted for when the pond was built; or
• The farmer may not be able to empty the pond fast enough to leave room for more storage.

Digging a bigger pond could solve these potential problems, but might create more trouble by increasing the area to collect rainwater. If roof runoff is the greatest source of volume, adding gutters would be an easier solution. Trading up for a larger honey wagon would also increase storage, if time of emptying is really the problem.

Once producers gain a better understanding of this approach and start seeing the components of a system as parts of whole, lots of little problems become solvable.

Picture at left: A well designed, constructed, and operated system accomplishes its task of pleasing the farmer, his neighbors, and the environment.

Picture at right: A poorly conceived and operated system leads to employee backaches.

Alternative Manure Technology videos earn ASABE’s Blue Ribbon

Doug Hamilton (left) and Craig Woods (below), OSU Agricultural Communication Services, were named recipients of a Blue Ribbon Award during the 2011 meeting of the American Society of Agricultural and Biological Engineers (ASABE) in Louisville, Ky.

The award was given in recognition of their efforts in producing outstanding quality educational materials. Typically only the best projects are nominated and about one nominee in five receive Blue Ribbon designation.

The video project title is “Alternative Manure Technology” Video Series in the Electronic Delivery category.

ASABE is an international scientific and educational organization dedicated to the advancement of engineering application to agricultural, food, and biological systems. Its 9,000 members, from more than 100 countries, are consultants, managers, researchers, and others who have the training and experience to understand the interrelationships between technology and living systems.

To view the blue ribbon winning videos go to: http://www.youtube.com/user/OSUWasteManagement

More information about the program can be viewed at http://osuwastemanage.bae.okstate.edu/