What Do We Do with All This Poop?
By Lacey Gaechter

What do we do with all this poop? This question has been central to the field of public health since its very inception. John Snow, the "father of public health," ended a nineteenth century cholera epidemic in London by deducing that the source of this disease was drinking water contaminated with sewage.

This important question is also part of the current debates in the joint House and Senate conference committee on the 2018 Farm Bill. In this case, the poop under consideration is from farmed animals instead of humans. The House version of the next Farm Bill would ostensibly increase funding for managing manure from industrial animal agriculture and the Senate bill would likely reduce it.

The Legislative Process

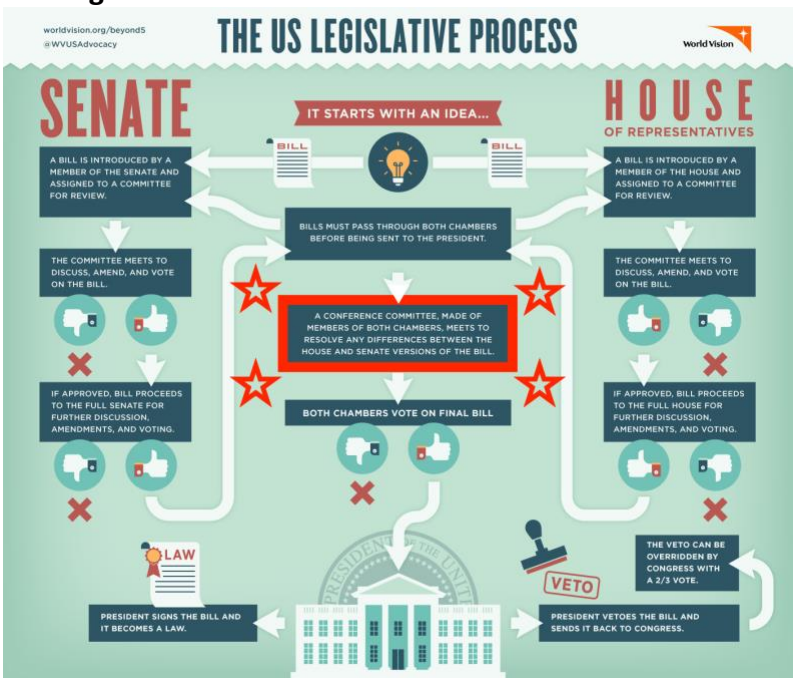

Figure 1 Illustration: Image adapted from https://www.worldvisionadvocacy.org/wp-content/uploads/2017/01/Bill_to_Law.jpg.

Each legislative branch has voted on its version of the 2018 Farm Bill. Now representatives from the House and Senate come together in what's called a *conference committee* – highlighted in red – to negotiate the final Farm Bill, based on both versions passed independently. Either chamber of Congress can then accept or reject the conference committee's version.

A Brief History of EQIP and CSP
The question of poop management falls under the working lands conservation program known as the Environmental Quality Incentives Program (EQIP). EQIP seems to have been proposed and passed with the noblest of intentions – to which many EQIP programs still aspire today.

Since the famous United States dust bowls of the 1930s (made possible by decades of human activity denuding soil until we were left with highly drought-susceptible dirt), our government has funded conservation programs designed to rebuild healthy soils. Originally, this effort was managed by the Soil Conservation Service, which eventually morphed into the Natural Resources Conservation Service (Harden, 2016). Over the years, soil conservation programs themselves expanded to include non-soil related measures that nevertheless improved environmental quality. The 1996 Farm Bill rolled several such working lands conservation programs into one – the Environmental Quality Incentives Program (Claassen et al., 2008).

EQIP is very specifically designed to help farmers adopt **new** conservation measures for both crop and livestock operations by sharing the costs of implementation. Farmers who had already borne the full cost of incorporating stewardship into their production activities, understandably, felt left out of the opportunities offered through EQIP (Claassen et al., 2008). In 2008 these farmers successfully lobbied their case, and the Conservation Stewardship Program (CSP) was approved as a means for rewarding those who were already engaged in good conservation practices – especially for soil conservation (Harden, 2016). Thus was born the idea of a system in which EQIP would help farmers get started on the road to conservation, eventually getting paid through the CSP for the ecosystem services they provide – great thing for our soil and thus our ultimate ability to farm for many generations to come.

How Manure Lagoons are Funded through EQIP

Our nation's path to improved soil health took a strange turn, however, when Congress's 2002 actions effectively set aside about 10 percent of annual EQIP funding to help industrial animal operations comply with new Clean Water Act Standards. The year prior, the US Environmental Protection Agency committed to holding Concentrated Animal Feeding Operations[1] (CAFOs) accountable for Clean Water Act standards. Congress quickly followed EPA's decision with several actions related to EQIP. The 2002 Farm Bill made CAFOs eligible for EQIP funding for the first time (Claassen et al., 2008). Congress also used that year's Farm Bill to increase EQIP funding nearly five-fold (Cattaneo et al., 2005). Furthermore, the Farm Security and Rural Investment Act increased the proportion of EQIP funding specifically designated to livestock producers from 50 percent to 60 percent (Claassen et al., 2008). Finally, Congress struck from EQIP the requirement to "maximize net environmental benefit per dollar expended," and instead placed "…emphasis on assisting livestock operations to comply with new Clean Water Act regulation" (Cattaneo et al., 2005).

Although the Clean Water Act has proven largely ineffectual in curbing pollution from the industrial animal agriculture industry (Centner & Alcorn, 2015; Graham & Nachman, 2010;

[1] The EPA defines a CAFO as a facility with at least 1,000 head of cattle for meat, 700 dairy cows, 2,500 pigs, 125,000 chickens for meat, or 82,000 laying hens (USDA Natural Resources Conservation Service, n.d.)

Heinzen & Russ, 2014; The Pew Environmental Group, 2010)[2], Congress's actions to help industrial producers in 2002 has lead to about 10 percent of EQIP funding each year going to the construction of poop lagoons (GAO, 2017). Yep, poop lagoons, which are lined pits in which we store the many tons of manure produced by animals raised in CAFOs . These pits are funded at the highest level of any single "conservation" practice implemented on working lands and cost US taxpayers about $80 million per year (GAO, 2017)

Figure 2 Image: Dairy farm manure lagoon with veal crates in the immediate background and the milking barn in the far background. Watch the video behind this image at https://www.youtube.com/watch?v=oSEYfs1V1JY.

The good things about the livestock manure lagoon system include:

1. Properly constructed manure lagoons are waterproof and thus keep fecal bacteria and other harmful substances out of underground drinking water supplies.
2. Most large, industrial animal agriculture facilities produce too much poop for the nearby land to absorb, so the lagoons provide an opportunity to store manure until we can transport it to far off locations where its nutrients are needed (Graham & Nachman, 2010).

The bad things about the manure lagoon system include:

1. It is exactly as terrible as you would think to live next to a manure lagoon, including for the family that operates it. Among other things, proximity to a pit of thousands of tons of poop dramatically lowers your property value, exposes you to airborne pathogens

2 Sixteen years after its decision to regulate CAFOs, the EPA had only brought 33% of CAFOs into compliance with Clean Water Act regulations (EPA, 2017).

and insects attracted to feces, and ensures that you do not want to spend much time outside (Hribar & Schultz, 2010).
2. Manure lagoons contaminate ground and surface water when they leak or overflow during rain and flood events (Hribar & Schultz, 2010).
3. Once you transport all this poop off-site it is no longer governed by the Clean Water Act, which leaves nothing to protect the public from disease outbreaks and other exposures caused by applying untreated manure to crops (The Pew Environmental Group, 2010).

The 2018 Farm Bill passed by the House of Representatives calls for an increase in funding for EQIP and thus, presumably, manure lagoons. Although EQIP does, in fact, include many practices that are unequivocally beneficial for soil, environmental and human health, it seems fair to question whether US citizens really want to foot an even larger bill for containing poop from industrial animal agriculture. An additional major downside with this plan is that it all together eliminates the CSP, although aspects of CSP would allegedly be rolled into EQIP.

The Senate version of the 2018 Farm Bill reduces funding for both EQIP and CSP, but would keep CSP in tact and eliminate the EQIP requirement to devote 60% of funding to livestock operations. The latter provision would at least provide the *opportunity* to shift funding from poop lagoons to practices that can more accurately be dubbed "conservation measures," rather than simply compliance with Clean Water Act regulations.

Some groups have proposed directing conservation dollars away from the Band-Aid lagoon "solution," which actually just allows the problem of industrial animal agriculture to propagate. Instead, they suggest using part of our working lands conservation funds to support "Sustainable Livestock" rotational grazing operations. These proposed systems would, by necessity, reduce farmed animal population densities, eliminating the need for manure lagoons. In other words, we would pay farmers to keep their livestock populations small enough that all manure can stay on-site without overwhelming the local ecosystem.

Unfortunately, neither the House nor the Senate Farm Bill include this approach to animal agriculture waste management. Thus the conference negotiating our final Farm Bill is left with the choice between more or fewer tax-payer funded manure lagoons imbedded within our working lands conservations programs.

Human societies have come a long way since the days of John Snow. I think we can do better when it comes to managing manure.

What do you think?
Do we need more manure lagoons?
Is the solution to start treating farmed animal sewage the same way we do human sewage?
Is the key to Sustainable Livestock simply fewer farmed animals?

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