I urge a no pass vote on HB1371. I believe that these and other measures introduced to accelerate the development of Concentrated Animal Feeding Operations in North Dakota will be injurious to the health of North Dakotans.

I recently retired as an Internal Medicine Physician who served ND communities for over 30 years, as well as a tour in Worthington, Mn, the heart of pig farming and processing operations. The smell of pig manure on surrounding fields made outdoor activity that November, even in town, almost impossible. But in addition to the obvious odor problem from too much manure on the landscape, from a human health point of view, I would like you to consider the issues of

1. Antibiotic resistance
2. Viral pandemics
3. Risk to water resources

1.Antibiotic Resistance

We have taken for granted that there is always a safe and effective treatment for any infection. Unfortunately, because bacteria evolve to resist one or more often more than one drug(antibiotic resistance), we can no longer assume this is the case.

Antibiotic resistance occurs when a population of bacteria meets an antibiotic; most may be killed while a minority survive and pass this mutation on to not only its own descendants but also other types of bacteria around as well. Because more than one gene can be transferred at a time, multiple drug resistances can occur with one step. It's a numbers game: the more antibiotics are used, the higher the chance of mutation and the more bacteria there are in one place, the higher the chance the mutations spread.

The most recent CDC report on Antibiotics Resistance in 2019 reported in the US that at least 2.8 million antibiotic resistant infections occur with over 35,000 deaths. An Emory University Study in 2014 estimated the cost of antibiotic resistant infection to be 2.2 billion dollars annually. The January 17,2023 issue of the American Medical Association reported at least a 15% rise in global antibiotic resistant bacteria from 2017-2020.

The medical community strives to promote antibiotic stewardship- using them only when needed, using the right one and for the shortest time- while also promoting good infection control measures.

The agricultural community must also do the same but **Concentrated** Animal Feeding Operations by definition put a lot of animals (and their bacteria) in close proximity and CAFOS's use a lot of antibiotics. This is the perfect setup for developing antibiotic resistant bacteria among the workers, in the food produced, in the air, water and soil.

In 2017, low level antibiotic use in feed to promote growth was banned in the US. However, antibiotics are still allowable to prevent disease in food producing animals. This is like giving everyone a shot of Penicillin to prevent strep throat. 2015 was the high point of livestock antibiotic sales with 9.7 million kg sold; this decreased to 6 million kg in 2020, about twice the

amount sold for human use. There are more animals than people and they may weigh more but this is still a LOT of antibiotic that isn't used to treat illness, but to maximize profit.
Let's not make a serious problem worse.

2.Viral pandemics

The havoc wreaked by COVID 19 should be a real wakeup call to the amount of illness, death and disruption a viral pandemic can cause. Influenza A , like the SARS virus, mutates regularly, but usually in a small way so that annually adjusted vaccines are still at least somewhat effective. Periodically, a major shift develops to which there is no human immunity or effective vaccine and we know what that looks like.
Shifts occur when the influenza virus from different species end up in the same cell and swap genes. Swine can be infected by not only swine viruses but also bird and human strains so they are a potential mixing vessel for a novel strain.

Gregory Gray, director of the Center for Emerging Infectious Disease at the University of Iowa Public Health wrote the following about the swine flu pandemic of 2009 which caused 60 million infections, 274,000 hospitalizations and 12,500 in the US alone:"But the same economy-of-scale efficiencies that allow CAFOs to produce affordable meat for so many consumers also facilitate the mutation of viral pathogens into novel strains that can be passed on to farm workers and veterinarians..." According to Andrew Pekosz, an associate professor of microbiology and immunology at the Johns Hopkins Bloomberg School of Public Health, newly virulent strains emerge randomly, by chance. By concentrating so many viruses in one place, he explains, CAFOs increase the frequency at which more dangerous strains might appear. "This is all a numbers game," he says. "The more variants you're exposed to, the more likely it is that you'll be exposed to one with altered properties that allows for infection of a new host."

Do we want to press our luck?

3.Threat to water resources

Siting CAFO's away from precious water resources and preventing damage to ground and surface waters should be a given. I have no confidence, after reviewing the permits for new CAFO's, renewals for existing CAFO's and the Livestock Manual which may or may not have the force of law, that this is a priority. Allowing almost 10,000 head of cattle to be situated over an aquifer on land which has a water table within a foot of the surface seems risky at best. A CAFO which has been in existence since then late 70's has demonstrated repeated failures to adhere to the number of permitted animals, tardy responses to leaking tanks and unlined manure pits, poor required record keeping- all without penalty.

Why would we want to go whole hog into CAFO's without a regulatory system is concise, well funded and have clear penalties for violations. Protection of clean water should be the priority, not promoting profit at any cost.

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Madeline Luke,MD
747 6th St NE
Valley City, ND 58072
701 306 7339
madelineluke@ymail.com
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