May 28, 2018

Hello Holly & Dr. Everson,

I am looking forward to our conversation next Wednesday. My hope is to ensure that people who live in the Lower Yakima Valley are included in Washington State decision making regarding the spraying and spreading of manure. Here are my thoughts after reading the Wisconsin studies.

These and other studies ask how many people can be infected with pathogens from aerosolized manure before we become concerned. Mark Borchardt, a USDA micro-biologist and member of the Wisconsin work group, has stated, “It really is a societal decision as to what is acceptable.”

The people of the Lower Yakima Valley who incur these risks are by definition the impacted society. We deserve a prominent place at the table when policy is formulated and we should receive relevant information in understandable layman’s terms. All involved need clear and accurate data from the WA State Department of Health (DOH) regarding elevated rates of infection, birth defects, morbidity and mortality in Yakima County.

With all due respect, the bureaucrats who typically make these hard choices do not live with manure laden air day in and day out. When people who live here say that family members no longer want to visit because of putrid odors (not just barnyard odors) that fact should be taken seriously.

**A longstanding goal for the Friends of Toppenish Creek is a countywide ban on spraying and spreading manures during air inversions. The Wisconsin work group report validates our concern and underscores the importance of this restriction. The Wisconsin report recommends against manure irrigation during inversions due to drift (pages 31, 33), odor (pages 36 37), air quality (pages 46, 48), and spreading pathogens (pages 53, 54).**

Campylobacter is a major concern in the Wisconsin studies (Genskow & Larson, 2016) and in Idaho studies (Dungan, 2014). There is a direct correlation between increased rates of Campylobacter infection and high concentrations of dairies in Washington State (Davis et al, 2013). WA DOH statistics show very high rates for this disease in the Lower Yakima Valley where 35% of the state’s milk cows are housed.

The work group report lists Cryptosporidium among zoonotic infections from cattle. This protozoon is waterborne and survives for long periods of time in soil. Dairy calf operations in the LYV have been re-located due to Cryptosporidium infestation of calf hutches and pens. The USDA finds that, on any given day, 22% of pre-weaned calves are shedding this organism. (USDA 1993, USDA 2016). We have high rates of Cryptosporidium in humans.

The referenced Wisconsin research only looks at gastrointestinal infections potentially related to manure irrigation. This is a small part of the total health impact from spraying and spreading manures.

About 14% of transmission of zoonotic diseases from cattle to humans is by inhalation. Major routes are:

* Ingestion 34%
* Cutaneous 30%
* Vector borne 18%
* Inhalation 14%
* Vertical 4% (McDaniel et al, 2014).

Zoonotic agents in cattle by microbiological category are:

* Bacteria 42%
* Parasite 29%
* Virus 22%
* Fungus 5%
* Prion 2% (McDaniel et al, 2014)

The only U.S. outbreak of Mad Cow disease, a prion related infection, occurred in the Lower Yakima Valley in 2003. This occurred next to the Yakama Indian Reservation and the small city of Mabton where 91.9% of the population is Latino and 26.8% of the population lives below the federal poverty level. Potentially infected calves were killed in order to contain the outbreak. Some were dumped in a wildlife refuge next to the Yakima River and those who did this were never prosecuted. Prions live in the soil for years and cause chronic wasting disease in deer and elk.

There are no guidance documents for manure spraying in Washington State. In Wisconsin producers are only allowed to use irrigation application of manures after receiving a state license. There is no such licensing in Washington. (Genskow & Larson, 2016).

It appears that all farms in Wisconsin are required to have and implement nutrient management plans (NMPs). Public health officials need to know that, in the State of Washington, dairies are required to develop NMPs but there is no requirement to follow them. (WSDA, 2017, page 11).

In Washington dairies are allowed to dispose of dead animals in their compost operations. Composting involves stacking manures in windrows and turning the manures at specified times. (WA State Dept of Ecology, 2005). This results in volatilization of a wide variety of potentially hazardous chemicals into the ambient air. There are essentially no inspections of manure composting in Yakima County.

In Wisconsin all CAFOs are required to have a Wisconsin Pollution Discharge Elimination System Permit. In Washington this is only required if a dairy has a documented discharge to waters of the state. Only 23 out of over 450 Washington dairies have National Pollution Discharge Elimination System (NPDES) permits. Thus requirements that make manure application safer are missing in Washington.

The work group report talks a great deal about setback distances for manure irrigation. It appears that the setback distances in Washington are much less restrictive. In Western Washington during the summer months dairies are allowed to apply manures within 10 feet of water bodies and critical areas. (WSDA, 2018)

The work group report (page 22, Table 2C-3) states that manure irrigation is prohibited within 500 feet of a dwelling in Wisconsin. In the Lower Yakima Valley there is a manure lagoon within 150 feet of a family home. Manures have been applied to the land and stacked within 50 feet of a family home.

In addition to gastrointestinal infections bovine to human agents may attack the pulmonary system, the integumentary system, the cardiovascular system, the nervous system and the reproductive system. (McDaniel et al, 2014).

Spray application of manure increases volatilization of ammonia and other hazardous chemicals by orders of magnitude. (Rotz, 2004). This is likely a greater source of risk to public health than infectious disease.

The WA State Department of Ecology (2014) has documented high levels of wintertime nitrates in the Yakima County air. Nitrates combine with ammonia to form fine particulate matter, a known and major threat to public health. About 31% of the fine particulate matter in the Lower Yakima Valley is ammonium nitrate. The ammonia is generated by animal feeding operations.

In 2011 Williams et al from John Hopkins University found bovine allergen bos d-2 inside homes near Yakima Valley dairies. They found cow allergen associated with airborne particulate matter at levels that were statistically significant up to three miles from dairies.

The University of Washington found decreased lung function in asthmatic Yakima children within two days of adverse air events and a greater impact from ammonia than from particulate matter. (Loftus, 2014). Air pollution not only impacts asthmatic children, it is also a likely cause of asthma and impairs healthy lung development.

On Saturday, May 26, 2018, we talked by telephone with Lynn Utesch, the only citizen in the 20 member Wisconsin work group. Mr. Utesch told us that he unsuccessfully asked to have his name removed from the report. The reason is that many of the report recommendations were “data free”. Proponents of manure irrigation screened and edited the report and excluded significant and relevant research. Studies on respiratory health were excluded. National Aeronautics and Space Administration (NASA) studies that described ammonia plumes, ammonia transport and resulting eutrophication were excluded.

Washington task forces could easily suffer the same fate. It is common practice for people from industry to “stack the deck” and control the outcome of a work group. If Washington chooses to study the implications of aerial application of manures to cropland the people of Yakima County and other impacted areas deserve an equal voice. The Friends of Toppenish Creek sincerely hope that the Yakima Health District will support this vision. Because this issue is so very important I will share this letter with others who advocate for the people of the Yakima Valley and Washington State.

Thank you for the opportunity to talk and expand on this issue.

**Jean Mendoza**

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