

Manure Irrigation Workgroup Meeting – October 22, 2013

DRAFT NOTES

Original Agenda

October 22, 2013, 9:00am - 2:00pm

Wisconsin State Lab of Hygiene

Board Room

2601 Agricultural Drive, Madison, WI 53718

Meeting Overview:

This meeting will review the initial Workgroup meeting on July 30, and focus on issues related to the content of manure, technology of manure application, and relationships to identified concerns. Background information is available at the project website (fyi.uwex.edu/manureirrigation).

Agenda

8:45am	Room available
9:00	Welcome, introductions, agenda review.
9:10	Review of discussion notes from July 30
9:30	Overview of file sharing system for Workgroup documents
9:45	Discussion: update on UW/ARS Drift study
10:00	Discussion: Manure content – variability of pathogens present in manure in different forms. Focus on the JAMA-Intern Med study on MRSA (attached) Break as needed
11:00	Discussion/Exercise: Review connections between identified risk factors and identified concerns
11:45	Break – box lunches provided
12:00pm	(continue through lunch) Discussion/Exercise: Review connections between identified risk factors and identified concerns
1:00	Discussion: applicable public health structures and regulations
1:20	Discussion: refine Workgroup timeline and future agendas
1:40	Wrap-up, closing comments, and preparation for next meeting (Nov. 22)
2:00	Adjourn

Notes from October 22, 2013 Discussion:

1. Attending:

Workgroup members: Ken Genskow, Becky Larson, Carrie Laboski, Andrew Craig, Pat Murphy, Todd Boehne, Rob Thiboldeaux, Suzanne Gibbons Burgener, Gloria Smedema, Sarah Grosshuesch, Kenn Buelow, Shelly Mayer, Jeff Polenske, Dana Cook, Lynn Utesch, Jeff Sommers, Gini Knight (for Jim VandenBrook), Mark Borchardt

Others Attending: Christe Greening (public), Joe Greening (public), David Nelson (UW), Sarah Koske (CDC/DHS).

2. Review Discussion Notes from July 30

The workgroup reviewed notes from the July 30 meeting, received copies of additional public comments submitted since July 30, and discussed revised ground rules. The workgroup also received an orientation to the new file sharing systems for documents. After the meeting, workgroup members received website link and login information for the site. This site includes documents from recent and past meetings, as well as stakeholder comments, articles, bibliographies, technical sheets and reports from various government and university sources. The site is not public, is password protected, but will allow all materials to be downloaded.

3. Update on UW/ARS Drift Study

Becky Larson and Mark Borchardt provided an update on the drift study. The team has conducted four center pivot trials, developed a drift model, identified model parameters which need more attention, and are seeking additional reference literature. The collection data modeled with the travelling gun seems to work well. They have been measuring inactivation rates after spraying relative to sun, wind, relative humidity etc. The team is testing for both live and genetic material. Researchers stated their need to get additional irrigation sites for testing runs to increase variation in conditions. They have experienced the condition of high solar intensity but not high wind speed. The budget allows for eight more runs at all sites. Seasonal and weather conditions may not occur as we anticipate. The team hopes to do some controlled experiments through the winter and is looking for indoor testing environments; there is a greenhouse site that may become available this winter. At a future meeting, researcher Chris Choi could come to discuss the model, equipment and assumptions

Andrew Craig announced that DNR has received additional comments about manure irrigation. Some are standardized campaigns, but others voiced similar concerns supporting a ban until risks are understood, especially regarding Ebert Enterprises' permit process. The Casey et al 2013 paper has been cited in public comments as a reason to deny the permit.

4. Review and Discussion of JAMA Internal Medicine article on MRSA

Copies were distributed prior to the workgroup meeting of a recent study published online in JAMA Internal Medicine (Casey et al 2013, JAMA Intern Med. doi:10.1001/jamainternmed.2013.10408). "High-Density Livestock Operations, Crop Field Application of Manure, and Risk of Community-Associated Methicillin-Resistant *Staphylococcus aureus* Infection in Pennsylvania."

The study associated high-density livestock operations with increased incidence of community-associated MRSA. Following an overview of the study by Rob Thiboldeaux, the workgroup discussed the articles strengths, limitations, and implications for our work.

Points raised in discussion:

They use case studies which is one of the best ways to measure exposure. These studies examine geographic density of livestock and amount of manure applied to fields (i.e. Livestock Operation Exposure and Seasonal Crop Field Manure Exposure based on nutrient management plans.

Table 3 in the paper includes a fairly sound univariate measure of exposure and whether it is associated with infection by CA/HA MRSA or SSTI. Does risk increase with increased exposure? P-values express quality of perceived trend. However, the paper does not address possible spatial correlation between swine and dairy farms. It is notable that fields without application show no association.

We have to be careful how we interpret these numbers. The reference group is the first quartile. If you have a trend expressing an increase of 11% when progressing through quartiles and the data is statistically significant, which many of these are not, the actual numbers of cases may still be very small. Trend odds ratios of 2:1 or 3:1 (increases of 200%-300%) are statistically significant and more compelling than the figures presented in Table 3 of this report. It is also better to look at the adjusted exposure rates which look at additional risk factors rather than the univariate. While hospital acquired infections are closely tracked due to federal requirements, CA-MRSA do not have the same reporting requirements. CA includes all community sourced infections.

It is important to note that this report is only taking data from one health care system. Study notes that swine farms are twice as likely to export manure. The study couldn't find a connection to the MRSA infection (CC398) most commonly associated with livestock exposure.

What is the upshot of this study? It doesn't prove there is a connection between livestock and MRSA infection. This is a solid study. We need to find how infection is moving. This begins describing that process but leaves many questions. How many of these farms use antibiotics? Which livestock are we talking about? Maybe dairy cattle do not produce a significant risk.

5. Review and discussion of connections between factors and concerns for manure irrigation

Using the July 30 discussion and 2012 technical workgroup summary as a starting point, the workgroup outlined a table of factors/characteristics associated with manure irrigation and their potential impact on issues of concern.

List characteristics and concerns

Pivot equipment:

Height

Pressure

- nozzle design
- nozzle angle
- wetting diameter
- droplet size

end gun

Mobile gun equipment

Height

Pressure

droplet

nozzle bore size/angle

Material

digested (and separated)

- manure and process wastewater
- with industrial* content

dilution

separated - physical

- settling ponds
- screw press/centrifuge

separated - advanced...chemical/polymer/membrane

- ammonia
- P
- membrane

raw/unprocessed - slurry (<11% solid content)

- mechanical agitation
- if blended with septage/muni sludge

Location

field proximity

- setback
- populated structures/dwellings (residence, schools, etc)
- other crops
- presence/absence of natural barrier
- roads
- natural features/waterways, wells, lakes, etc
- relative elevation (in relation to surrounding area)

Weather

precipitation

UV

inversion

wind (average wind speed/gust?)

relative humidity

temperature

Other important considerations:

overall, rate of application dependent on:

- antecedant soil moisture
- soil texture
- growth stage of crop
- nutrient content/availability

*where "industrial" implies food processing and related wastes that are contributed to manure pits

The columns represented “best” and “worst” conditions for various concerns, including an assessment of the potential to measure characteristics. Listed concerns included: drift, odor, health risk, negative impact on surface water quality, negative impact on groundwater quality, and negative impact on air quality.

Actions: Becky Larson and Ken Genskow will refine and further develop the table prior to the next meeting. Carrie Laboski and Andrew Craig will discuss how to incorporate issues of rate application into the table.

6. Overview of applicable public health structures and regulations in Wisconsin.

Rob Thiboldeaux, Sarah Grosshuesch, and Gloria Smedema provided an overview of key public health organization in Wisconsin.

Points:

Local and state departments have no direct regulatory power over agriculture, except broadly in certain situations. Private nuisance is two parties in conflict which prevents the full use and enjoyment of property by the complainant. Remedy = civil suit. Right to farm laws were originally designed to prevent inhibition of continual operation based solely on nuisance (noise, odor, aesthetics, etc); there must be public health hazard. Public health hazard is a high bar to meet, especially with regard to air quality. State 254.59: local health officer has authority to abate human health hazards. Political and organizational interactions affect enforcement. Site specific inspections may result from complaints. One or two complaints may not lead to action. Adults can legally choose to live in unsafe environments if there is no negative effect upon their children or neighbors. Risk means potential for harm, and is considered in assessments and recommendations. Healthy individuals are used for determining exposure risks.

Sarah announced the Adams County passed a draft “Ordinance Regulating Distribution of Manure by Spray Irrigation” out of committee. The ordinance is set for a vote of the full county board soon. The county workgroup, which includes producers, unanimously decided to recommend a ban on manure spray irrigation until more is known. Mitigating this are options for conditional permitting, and exceptions for properties whose neighbors within 1000 yards agree to allow use. Indicating the presence of manure irrigation through the placarding of public roads is part of the process. Sarah emphasized this may not be appropriate for all counties.

7. Discussion of Workgroup timeline and future meeting agendas

Rough agendas were outlined for future meetings:

November 22 – Risk and QRMA

- Revised best/worst table; expanding to include operational issues
- How people perceive risk – specific factors for public health risk
- Risk and Assumptions for QMRA – what are general public health risks and acceptable limits? How can we use those to frame our discussion?
- What does end product look like for this group – what more do we need to know?

December 13 – environmental health and safety theme

- Best/worst table
- Organic & direct market, and vegetable/food safety guidelines and standards – what is at risk for those operations?
- Revisiting regulatory framework – water quality, drinking water, health
- Review of benefits associated with irrigated application compared to conventional

The workgroup decided to find dates for two additional meetings over the winter.

8. Actions before next meeting.

- Larson and Genskow: refine and develop best/worst table
- Laboski and Craig will discuss how to incorporate issues of nutrient availability and rate into the table
- Distribute scheduling tool for winter meetings