To: McKaughan, Colleen[McKaughan.Colleen@epa.gov]
From: Don't Waste Arizona
Sent: Fri 7/31/2015 1:25:50 AM
Subject: Fw: Tracking #91850

To use ARS 49-457 to explain away its responsibilities in its permit to Hickman's, the MCAQD is relying on the unproven theory that all of the odors from Hickman's are being caused by particulate matter. Of the list below, only Skatole is a powder.

Numerous studies have identified other gases in chicken manure and they should be appropriately monitored when odor complaints occur. According to North Carolina State University study *Understanding Livestock Odors* (Publication AG-589) poultry manure odorous emissions are hydrogen sulfide as well as aliphatic (fatty) acids, amines, ammonia, aromatics, and inorganic and organic sulfur. When anaerobic conditions occur methane, carbon dioxide, ammonia, acetic, propionic and butyric are produced. "The decomposition of amino acids by bacteria produces amines, such as cadaverine and putresine. The very offensive smelling compound methyl mercaptan is a product of amino acid decomposition, and can be oxidized to the unpleasant smelling compounds dimethyl disulfide or dimethyl sulfide." Other studies that support this conclusion are: *Agricultural Waste Management: Problems, Processes, and Approaches* by Raymond Loehr (adds two- to five-carbon organic acids, indole, skatole, & diketones); Air Quality and Emission from Livestock and Poultry Production/Waste Management Systems (adds nitrous oxide, mono-methane volatile organic carbon, dust, and microbial and endotoxin aerosols); *Chapter 4. Emission and Community Exposures from CAFOs* by Steven J. Hoff, et al; *Odors from Confined Livestock Production* EPA-660/2-74-023 (adds volatile compounds butyric acid, ethanol, acetoin, & acetic, propionic, iso-butyric, n-butyric, iso-valeric, and n-valeric acids); *Odor Assessment of Idaho Livestock Farms and Manure Application Practices*; and other references can be provided.

Raising a Stink: Air Emissions from Factory Farms by Michel Merkel provides examples of CAFO odor qualities (page 5):

Chemical Name	**Smell**
Hydrogen sulfide	Rotten Eggs
Dimethyl sulfide	Rotting vegetables
Butryic, isobutryic acid	Rancid butter
Valeric acid	Putrid, fecal smell
Isovaleric acid	Stinky feet
Skatole	Fecal, nauseating
Indole	Intense fecal

From: Jacqueline Robinson - AQDX
Sent: Thursday, July 30, 2015 3:54 PM
To: Steve Brittle
Subject: Tracking #91850

Mr. Brittle,

My email is in regard to your most recent records request for… all work plans, testing, and sampling results conducted by MCAQD or others to determine the constituents of the stench and odors emanating from the Hickman's Tonopah facility. Our Compliance Division has informed me that the only testing they do is for H2S. I believe there has been one more test since your last request. Are those results of interest to you even though they do not measure the 'constituents' you were requesting?

Please let me know at your earliest convenience and I will have the results sent to you if you want them.

The Air Quality Department strives to provide excellent customer service to residents of Maricopa County.

How are we doing? Send us your feedback.

Jacqueline Robinson

Executive Assistant to Director Philip A. McNeely

Maricopa County Air Quality Department

1001 N. Central Avenue, #125 | Phoenix, AZ 85004

Located at the Central Ave. & Roosevelt METRO stop

Desk 602.506.6443 | *CleanAirMakeMore.com*

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