

Odor Exhibits for General Public: What Works



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What is Odor?

- A perception of volatilized chemicals as sensed by the olfactory nerve.
 - Pleasant scents are called fragrances, perfumes and aromas.
 - Unpleasant scent may be called malodor, stench, reek, stink, etc.
 - U.S.: Scent or aroma are used for pleasant ones, and odor for unpleasant.
 - U.K.: "Odor" refers to scents in general
- Odor sensation and perception by 350 olfactory receptors in our nose
 - Depends on concentration of odorants (organic or inorganic compounds)
 - We can distinguish at least 10,000 scents/odors in 7 primary classes:
 - Musky – perfumes/aftershave
 - Putrid – rotten eggs
 - Pungent – vinegar
 - Camphoraceous – mothballs
 - Ethereal – dry cleaning fluid
 - Floral – roses
 - Pepperminty – mint gum

Source: Wikipedia- <http://en.wikipedia.org/wiki/Odor>

Livestock Odor Research at Purdue University (1993-present)

- 1993 to present
- Sensory methods: laboratory and field olfactometric evaluations
 - Concentration: dilutions to the odor threshold concentration
 - Intensity: strength
 - Hedonic tone: ranking scale of pleasantness/offensiveness
 - Characteristics: what does it smell like
- Analytical methods
 - Direct measurement of ammonia and hydrogen sulfide
 - Measurement of volatile organic compounds





Open House Exhibits for Livestock Odor Research?

- Unpleasant nuisance odors drive research and education programs
 - Main sources are animal manures and mortalities
 - Negative connotations – subject of numerous lawsuits
- Bringing livestock odor to a fair or open house
 - Manure and fairs do not mix well
 - Health and safety officials will have concerns
 - Exhibit may become odor nuisance for the open house
 - Relatively low interest in livestock odor among general public
- Odorants in livestock manure odor such as hydrogen sulfide are dangerous at high concentrations
 - Sniffing by public will require human subject committee approval
 - Effort will be expended to assure the public of exhibit safety



The Annual Purdue Springfest (University "Open House")



This "odor" exhibit caught their attention (1998-present)!

- Enjoyed by adults and kids
- Very popular (busy all day)
- Challenging
- Educational
- Unique



Essential Oils (5 mL vials)

Initial Set		Current Set	
Easy	Dill	Easy	Grapefruit
	Grapefruit		Ginger
	Garlic		Anise
	Spearmint		Lemon
	Lemon		Cinnamon
	Peppercorn		Peppermint
	Sweet Orange		Eucalyptus
Medium	Nutmeg	Medium	Spearmint
	Anise		Lavender
	Line		Citronella
	Sassafras		Cypress
	Cedarwood		Rosewood
	Eucalyptus	Hard	Basil
	Cinnamon-Casia		Palmarosa
	Bitter Almond		Sage
Hard	Labdanum		Chamomile
	Thyme		Tea Tree
	Clove		Patchouli
	Rose Geranium		
	Myrrh		
	Sweet Birch		
	White Pine		



82%



62%

36%

Response Sheet

Test Your Nose Here!

- Record the number of the sample next to the name of the odor.

Jars with Green Numbers Low Difficulty		Jars with Black Numbers Medium Difficulty		Jars with Blue Numbers High Difficulty	
No.	Odor	No.	Odor	No.	Odor
	Grapefruit		Eucalyptus		Basil
	Ginger		Spearmint		Palmarosa
	Anise		Lavender		Sage
	Lemon		Citronella		Chamomile
	Cinnamon		Cypress		Tea Tree
	Peppermint		Rosewood		Patchouli

Recommendations for Future Exhibits

- Give prizes for high performance
- Include poster/display about livestock odor issues
 - To encourage discussion with interested parties
 - To educate those who would read the display
- Demonstrate mitigation methods
 - Distance from source
 - Covering
 - Air treatment (biofiltration, absorption, scrubbing, etc.)
 - Masking
