

Compliance of animal exhibits
with *E. coli* risk-reduction
guidelines at North Carolina
agricultural fairs

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and Consumer Services, Emergency
Programs Division

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Introduction

- Shiga-toxigenic *E. coli* causes outbreaks of hemorrhagic colitis, hemolytic uremic syndrome
- >73,000 illnesses, 2100 hospitalizations, 60 deaths each year
- >\$400 million/yr
- Increasingly associated with animal contact

Background

- Large *E. coli* O157 outbreak in Oct. 2004
- Traced to one petting zoo at NC State Fair
- 108 illnesses, 20 hospitalized, 15 cases of HUS
- Median age 5 yrs
- \$Hundreds of millions in lawsuits

State Fair outbreak investigation

- Touching or stepping in manure
- Falling or sitting on the ground
- Pacifier, "sippy" cup, sucking thumb
- Waterless hand sanitizer use not protective
- Awareness of risk from contact with livestock was protective

Source: *MMWR* 2005 Dec 23;54(50):1277-1280.

Guidelines for Reducing Risk of Disease Associated with Animals at Public Events

*Developed by
North Carolina Department of Agriculture & Consumer Services*



*and
North Carolina Department of Health and Human Services,
Division of Public Health*



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Guidelines

- Rules are general – intended to interrupt transmission of any zoonotic disease
 1. Education and signage
 2. Animal areas
 3. Transition areas
 4. Animal care and management
 5. Additional recommendations

Aedin's Law

- Aedin's Law went into effect Oct. 1, 2006
- Animal contact exhibits at fairs
 - Must comply with guidelines
 - Must obtain a permit from NCDA
 - Permit issued after field staff inspects exhibit
- NCDA requests that non-contact animal exhibits comply voluntarily

Objectives

- Assess compliance of animal exhibits with rules/guidelines
- Identify areas of low compliance
- Identify barriers

Methods

- Study population: all animal exhibits at fairs
- Survey performed at all agricultural fairs
- Compliance assessed as yes, no, or N/A
- Surveys completed by NCDA field staff

Fair: <u>Pitt County</u>		Date: <u>10/2/06</u>
Evaluator: <u>Henderson</u>		
Exhibit Name: <u>livestock barn</u>		
Exhibit Owner and Contact Info: <u>Pitt County Fair/Lions Club; Overseen by Extension Agent</u>		
Type of Exhibit		YES NO
	Animal contact exhibit (rules)	<input checked="" type="checkbox"/>
circle	petting zoo baby poultry pony ride other _____	
	Non-contact animal exhibit (guidelines)	<input checked="" type="checkbox"/>
circle	livestock poultry birds rabbits camel/elephant ride	
	exotic animals pig race other <u>horses</u>	
Signs		
1	Signs: contact with animals may pose health risk	<input checked="" type="checkbox"/>
2	Signs: items prohibited (pacifiers, baby bottles, open drinks, food, smoking)	<input checked="" type="checkbox"/>
3	Signs: high risk populations (elderly, < 6, pregnant)	<input checked="" type="checkbox"/>
4	Signs: Hand wash station	<input checked="" type="checkbox"/>
5	Lettering at least 3/8" high	<input checked="" type="checkbox"/>
Fencing, Disinfection, Manure Storage		
6	Fencing at least 29" high	<input checked="" type="checkbox"/>
7	8" Board at bottom to contain manure and bedding	<input checked="" type="checkbox"/>
8	Surfaces made or painted with impervious material	<input checked="" type="checkbox"/>
9	Surfaces cleaned and disinfected prior to Fair opening	<input checked="" type="checkbox"/>
10	All surfaces currently clean?	<input checked="" type="checkbox"/>
11	Impervious surface under animal event area?	<input checked="" type="checkbox"/>
12	Manure storage inaccessible to public, bagged or in closeable container?	<input checked="" type="checkbox"/>
Hand-Washing Stations		
13	No food and beverages available between exit and hand-washing station?	<input checked="" type="checkbox"/>
14	Is hand-washing station within 10 feet of exit?	<input checked="" type="checkbox"/>
15	Soap, running water, paper towels and disposal containers available?	<input checked="" type="checkbox"/>
16	Are hand-washing stations suitable for small children?	<input checked="" type="checkbox"/>
17	Does signage direct patrons to hand-wash stations?	<input checked="" type="checkbox"/>
18	No dispensers for waterless hand sanitizing lotions or gels?	<input checked="" type="checkbox"/>
Animal Health		
19	All animals have official certificate of veterinary inspection?	<input checked="" type="checkbox"/>
20	All eligible animals have rabies (cattle, sheep, horses) vacc. certificates?	<input checked="" type="checkbox"/>
21	No animals too young to receive rabies vaccine?	<input checked="" type="checkbox"/>
22	All animals vaccinated > 3 months but < 1 year ago?	<input checked="" type="checkbox"/>
23	No near birth, or 2 week old, cattle, sheep or goats?	<input checked="" type="checkbox"/>
Record Keeping, Restrictions, and Permit		
24	Daily records of disinfection and animal monitoring maintained?	<input checked="" type="checkbox"/>
25	Is area supervised at all times?	<input checked="" type="checkbox"/>
26	No children under 6 allowed into area without adult supervision?	<input checked="" type="checkbox"/>
27	Contact animal exhibit permit issued or available for inspection?	N/A
28	How many hand washing sinks are near this animal area? <u>2</u>	
29	What disinfectant is being used?	
	Bleach Virkon Enviro Odoban other <u>none</u>	
16	Handwash stations have foot-pedals and are too tall for small children. I asked that a stool be put there for children to stand on, but they will still need help using it.	
19	Livestock are supposed to have health certificates but they are not checked	
22	No vaccination records	

Results

- 43 fairs, 5 with no animals
- No data from 2
- Remaining 36 fairs had 89 animal exhibits
 - 30 contact
 - 57 non-contact
 - 2 giveaways

Results

- 2006
 - All exhibits 78%
 - Animal contact 93%
 - Non-contact 70%
- 2005
 - All exhibits 64%

Data analysis

- Survey questions weighted with 1-4 points according to importance of guideline
- Those that limited contact with animal bedding/waste and promoted effective hand washing weighted heaviest
- Scores calculated by multiplying the number of exhibits in compliance by the weight, divided by the total number of points possible, x 100

Results

- Compliance scores

- Total 81
- Animal contact 95
- Non-contact 73

- Sections with lowest compliance

- “Animal health” and “Recordkeeping & restrictions”

- Rules with lowest compliance

- Exhibit held on impervious surface
- 8” solid panel at bottom of fences

Barriers

- Lack of knowledge of rules
 - Carnivals
- Lack of funds
- Lack of interest

Future Considerations

- Many handwash stations not user friendly for small children
- Issues with drainage of waste water
- Live animals being given away as prizes
- Other agencies giving different instructions

Limitations

- 7 different evaluators – not entirely consistent
- Some questions had to be answered by exhibitor – may not know or may not answer honestly
- Most exhibitors knew desired response
- Person in charge of livestock barns frequently not present to answer questions for survey

Conclusion

- Most animal exhibitors will voluntarily implement preventive measures
- Requiring implementation increases compliance
- Program had no funding from the state
- Reasonable cost to exhibitors and fairs

Conclusion

- Most exhibitors felt rules were fair
- Average case of *E. coli* O157 estimated to cost \$5,515; some HUS cases have cost >\$6 million
- Program should be cost effective, could easily be expanded

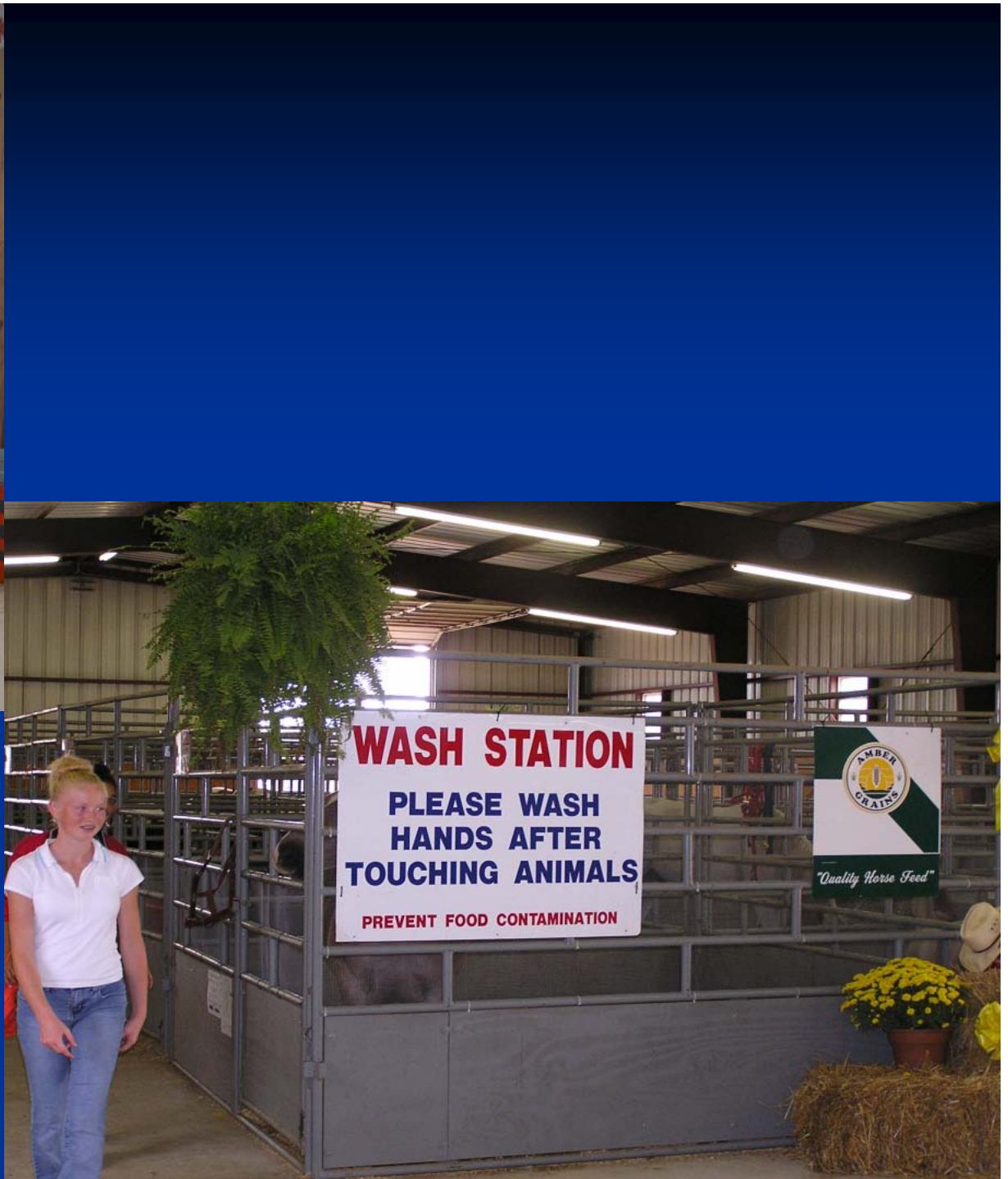
FIGURE. A child stands near goats and goat droppings in a petting zoo at the 2004 North Carolina State Fair



Photo/North Carolina Division of Public Health



Photos/NCDA&CS



Photos/Wayne Regional Fair



Photos/Wayne Regional Fair

