

Problem Based Learning Exercise
“Farmer in the Dell”
Facilitator Notes

Scenario Part 1

Plausible Hypotheses

1. Waste management problem
2. Danger to local bodies of water
3. Water source contamination
4. Threats to the environment

Additional Information

1. Details of aftermath of Hurricanes Dennis and Floyd
2. Details about hog farms in North Carolina
3. Details of chicken factories, information on factories on Delmarva peninsula
4. Health risks from factory farms

Scenario Part 2

Health risks:

- Pollution from animal waste has been linked to respiratory problems, skin infections, depression and even death

Environmental issues:

- North Carolina produces 19 million tons of waste each year. Current waste management methods impact nearby communities and the environment. They are the major contributor to nitrate contamination of groundwater and nitrogen ammonia pollution.
 - Sprayfields aerosolize pathogenic coliform bacteria. Hog waste applied to land contains 100 to 10,000 times the number of pathogens in human waste treated through municipal treatment systems.
 - Hog lagoons accumulate waste for up to 10 to 20 years. Hog feed is fortified with heavy metals, primarily copper and zinc, which can be toxic to plants and animals even at low concentrations. Significant amounts of heavy metals can accumulate in lagoons, creating hazards with waste removal.
 - Antibiotic resistant pathogens have been created by the overuse of antibiotics in the industry. They are used on a large scale to cure sick animals, improve life expectancy, increase weight gain and prevent sickness. Prophylactic antibiotic use is increasing and has become very controversial.
- An EPA report found that hog, chicken and cattle waste has polluted 35,000 miles of rivers in 22 states, and contaminated ground water in 17 states.
- Animal manure is rich in nitrogen and phosphorus. Excesses spill over to the local waterways and greatly increase the growth of algae. The resulting algae blooms consume available oxygen, deprive streams of oxygen and lead to large scale fish kills.

Additional Information

1. Natural Resources Defense Council
2. Clean Water Act
3. Regulations on and recommendations for waste management

Scenario Part 3

Additional Information

1. Healthy Communities initiatives to “fight this thing.”
2. Scorecard or other resources to become active in EPA issues and/or community environmental groups

Objectives

At the conclusion of this exercise, the student should be able to:

1. Identify the threats to health and the environment posed by factory farming.
2. Describe the efforts of the Natural Resources Defense Council and the Clean Water Act.
3. Access Public Health agencies for information
4. Conclude that the cousin should “fight this thing.”
5. Outline ways for concerned citizens to demand control and monitoring.

Web Resources

Barrett, B. (Sept. 19, 1999). Hog waste escapes dozens of lagoons as Neuse rises. The News-Observer. Available: On-line: <http://news-observer.com>

Environmental Defense (2000). Hogwatch. Available: On-line: <http://www.hogwatch.org/getthefacts/factsheets/enviroimpacts.html>

Environmental Defense (2000). Scorecard. Available: On-line: <http://www.scorecard.org>

Global Resource Action Center for the Environment (2000). Available: On-line: <http://factoryfarm.org/facts.html>

Natural Resources Defense Council (1998). Clean Water & Oceans: Water Pollution: In Depth: Report America’s Animal Factories. How States Fail to Prevent Pollution from Livestock Waste. Available: On-line: <http://www.nrdc.org/water/pollution/factor/aafinx.asp>

Print Resources

Barker, R. (1998) And the waters turned to blood: The ultimate biological threat. New York, NY: Simon & Schuster.

Author Information

Laurine T. Charles, MHS
Coordinator of Academic Affairs
College of Health Professions
Medical University of South Carolina
45 Bee Street
P.O. Box 250701
Charleston, SC 29425
(843) 792-4103 (Phone)
(843) 792-4024 (FAX)
charlelt@musc.edu

Adapted from Mock, K. (2000). Factory farms. In Environmental Health Case Studies. [On-line]. Available: <http://home.sc.rr.com/masverde/>

Funding provided by the South Carolina Sustainable Universities Initiative, Patricia Jerman, Program Manager. Information available at: pjerman@environ.sc.edu