

Ohio's Science Education Standards Grade 5 Earth Systems

- Explain how the supply of many non-renewable resources is limited and can be extended through reducing, reusing and recycling but cannot be extended indefinitely.
- Investigate ways Earth's renewable resources (e.g., fresh water, air, wildlife and trees) can be maintained.

Pork farmers are dedicated to raising a high-quality food product in an environmentally friendly and humane manner. Farmers are also consumers—their families share the same environment as their neighbors. They continue to look for ways to protect and maintain fresh water, air, wildlife and trees.

OHIO'S FARMERS PROTECT OUR WATER

Pigs use much less water than humans do. A human generates about 60 times more wastewater than a pig through activities such as flushing toilets, taking showers and running dishwashers and washing machines. On average, 1,000 humans generate about 90,000 gallons of wastewater per day. On the other hand, 1,000 pigs generate about 1,500 gallons per day.

WATER ACTIVITIES

Invent a filter and send it to PBS Kids ZOOM Activities.
pbskids.org/zoom/activities/sci/waterfilter.html

For humans, wastewater is treated so it can be released directly to rivers, lakes or oceans. During this treatment, nutrients are released into the air or collected in the sludge (settled solids). The sludge is often applied to agricultural land. Unlike municipalities, farmers are not allowed to let water from their manure treatment systems enter rivers, streams or other water bodies, even if the manure has been treated to remove nutrients. Tom Price of Price Farms Organics, Ltd. composts manure. Other farmers use lagoons or slurry systems to manage waste.

Additional science topics to investigate:

- environmental issues: real-world applications
- agriculture: plants and animals
- recycling and composting
- air quality
- water quality
- emissions
- filters
- buffer strips

OHIO'S FARMERS PROTECT OUR AIR

Odors are generally regarded as nuisances rather than health risks. Odors come from three basic places on a farm: animal housing, manure storage, and the fields where manure is applied. Trees and shrubs are used to reduce odors beyond the property line. Landscaping acts as a filter for dust and particle emissions, slowing the particulate movement and diluting emissions. Other ways to reduce odor include keeping hog barns clean and dry with a ventilation system to bring in fresh air. Air exhaust hoods can help disperse odor. Deodorants and masking agents are available, but have not proven reliable. Dietary modifications and feed additives can reduce odor-producing compounds in manure. University and industry research is ongoing to identify odor control technologies.

AIR QUALITY ACTIVITIES

Build a model with accessible materials to represent a barn and a windbreak of trees. Using a fan, test the impact of air flow on tissue paper or another light weight material to determine the best placement of landscaping to protect the neighbors.

OHIO'S FARMERS RECYCLE

Composting is the decomposition of plants and other once-living materials. It is nature's way of recycling. It happens naturally when leaves and dead bugs, etc. drop to the ground and begin to decay. With the help of microorganisms, worms, and insects, the decaying material is broken down into nutrients, returning to the soil after life. Plant roots reclaim these nutrients from the soil and use them to help the plant grow.

COMPOSTING ACTIVITIES

Students can work in groups to create an environment for composting to observe the breaking down of elements and the changes over time.

Visit Washington State Department of Ecology, Kids composting
ecy.wa.gov/programs/swfa/kidspage/compost.html