Ohio Department of Health

Bureau of Environmental Health and Radiation Protection

"Protect and improve the health of all Ohioans by preventing disease, promoting good health and assuring access to quality care."

Odors and your Health

Answers to Frequently Asked Health Questions

Odors

Ohio's local public health officials are often asked to evaluate the health impacts from exposure to environmental odors. An odor is a chemical in the air that is "smelled" or sensed by our nose (olfactory system). Apples smell like apples due to the chemicals that create the apple odor. Odors, also called smells, can be both pleasant and unpleasant. Stench and stink are words typically used to describe unpleasant, foul odors.

We breathe 10,000 to 20,000 liters of air a day, mostly through our noses. The olfactory system comes in contact with a different variety and concentration of chemical odors every day. **Odors *can* alert people that something may be harmful, <u>but generally</u>, you can smell many chemicals before they are at levels that are harmful to your health.** For example, we are able to smell hydrogen sulfide (H_2S) (smells like rotten eggs) at very low levels; levels much lower than those at which this chemical can cause toxic health effects.

Sources of environmental odors

Many products and activities in our daily lives produce odors. For instance, the foods we eat, our cleaning supplies, paints, carpet, gasoline, gardens, air fresheners, cut grass, old shoes, etc. all have odors.

Environmental odor sources include:

- agricultural practices (fertilizers/ pesticides)
- animal farms
- chemical manufacturing or handling facilities
- food processing plants
- harmful algal blooms (HABs)
- landfills
- petroleum refineries
- wastewater treatment facilities
- wood treatment plants

Can odors cause health problems?

Yes, certain groups of chemicals that produce odors are potentially harmful and can cause health problems. Some of these harmful chemicals are regulated by the Environmental Protection Agency (EPA) under the Clean Air Act. Other environmental chemical odors may not be regulated under the Clean Air Act, thus making it very difficult to address and/or enforce nuisance odor-type complaints.

Just because something smells bad does not mean it is harmful (example: rotten eggs). On the other hand, some dangerous and/or deadly chemicals can have a mild or sweet odor (benzene) or no odor at all (carbon monoxide).

Health effects from exposure to chemical odors can be an immediate (acute) health threat, a long-term (chronic) threat, or may pose no health threat at all. Getting sick from chemical odors will depend on what you are exposed to, <u>how much</u> you were exposed to (dose), <u>how long</u> you were exposed (duration), <u>how often</u> you were exposed (frequency) and your individual sensitivity to the odor.

The influence of odors on the health and comfort of individuals is difficult to evaluate. Odor sensitivity and response to odors differ from person to person. For some people who are more sensitive to odors, simply smelling a small amount of a foul odor can cause headaches and nausea (upset stomach). Sensitive populations include young children, pregnant women, the elderly and people with chronic health problems.

People with chronic health problems include persons with asthma, emphysema and other respiratory diseases, persons with COPD (Chronic Obstructive Pulmonary Disease), persons with depression, chemical hypersensitivity or stress-induced illness.

The most common community health complaints resulting from exposure to odor-producing chemicals are:
Respiratory (breathing)
- Upper respiratory - scratchy throat
- Lower respiratory - coughing, wheezing

Eye irritation - watery, scratchy
Gastro-Intestinal (stomach) - vomiting, diarrhea
Central Nervous System (CNS) - drowsiness, dizziness, headaches
Cardiovascular (heart) tachycardia (increased heart rate), increased blood pressure
Psychological - mood changes, behavioral changes

Usually, these symptoms occur at the time of exposure and end within a short time after the odor disappears. Although this situation is highly undesirable, the health effects usually end when the exposure to the odor ends and rarely requires medical attention.

Odor facts

In general:
- Younger people are more sensitive to odors than older folks
- Women are more sensitive to odors than men
- Non-smokers are more sensitive to odors than smokers
- People with an empty stomach are more sensitive to odors than people who just ate
- People are more sensitive to odors in the morning than during the evening

Odors can affect both behavior and physical health:
- Behavior – Mood, level of alertness, stress levels
- Physical health - Headaches, nausea, respiratory problems in asthma sufferers, neuro-muscular control problems and causes seizures in epileptics

Health Effects of Odors:

Pleasant odors can have beneficial health effects:
- Positive, happy mood
- Easier to learn/work
- Easier to sleep
- More resistant to pain
- Fewer headaches and stomach aches

Unpleasant odors can have negative health impacts:
- Nausea
- Headaches
- Depression
- Increased anxiety
- Elevated blood pressure
- Decrease in physical energy
- Compromised immune system
- Asthma attacks in asthma sufferers
- Physical discomfort (aches & pains)
- Increase in anger and stress levels
- Muscular control problems, fatigue (tiredness), confusion

Conclusions:

Often it is hard to draw a distinct line between a nuisance odor problem and outright public health problem with physical symptoms in the impacted community.

Unpleasant odors have often been recognized as "warning" signs of potential risks to human health rather than direct triggers of health effects. But we also know that odors from environmental sources might indeed cause health symptoms depending on the individual and specific environmental factors.

Each odor complaint/concern needs to be considered separately since

they may differ widely in their nature and severity.

While non-regulated chemical odors are not usually a significant public health hazard, the odors may, at times, be unpleasant and produce discomfort and temporary health symptoms. Measures to contain or eliminate unpleasant odors and prevent their migration (movement) to the community are warranted when these odors create a persistent nuisance.

References:

"Physiological Responses To Odors." Air Pathway Assessments. Agency for Toxic Substances and Disease Registry Region 5 (ATSDR-R5) State Public Health Department Meeting, U.S. Public Health Service. Zion, Illinois, May 21, 2002.

"Health Effects of Odors." Georgia Department of Human Resources, Division of Public Health Chemical Hazards Program July, 2004.

USEPA (1991) Air Emissions from Municipal Solid Waste Landfills – Background Information for Proposed Standards and Guidelines. EPA-450/3-90-011a.

Where Can I Get More Information?

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