



## WEATHERIZATION

### TOPIC OF STUDY

Health and Safety



90 MINUTES

### KEY TERMS

dew point  
evaporation  
condensation  
water vapor  
mildew  
vapor barrier

## LESSON

Moisture, Mold, Mildew and Health Problems

## OBJECTIVES

Students will:

- Identify typical sources of moisture in a home
- Explain the role of a vapor barrier

## BIG IDEA(S)

Air flow and moisture in the home can impact the health and safety of the occupants.

## TASK LIST SUBCATEGORY

- 801 Identify the principles of building science
- 802 Describe the interconnection of systems
- 106 Describe the impact of energy systems (social, economic, health, and environmental)

## OVERVIEW

A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems. A house is a single system of connected parts. Simple systems can work in predictable ways; dynamic systems exhibit more complex and unpredictable behaviors.

## STANDARDS

### PA/SDP

- 3.1.12.A8.** Change and Constancy: Describe and interpret dynamic changes in stable systems
- 3.2.12.A5.** Change and Constancy: Predict the shift in equilibrium when a system is subjected to a stress
- 3.3.10.A5.** Water: Explain the processes of the hydrologic cycle.
- 3.4.10.A2.** Interpret how **systems** thinking applies logic and creativity with appropriate comprises in complex real-life problems.
- 3.4.12.B1.** Analyze ethical, social, economic, and cultural considerations as related to the development, selection, and use of **technologies**.
- 3.4.12.C3.** Apply the concept that many technological problems require a multi-disciplinary approach.

## INSTRUCTIONAL

### TEXT/REFERENCES

*Energy Conservation Handbook.* pp. 101 – 105

### MATERIALS NEEDED

**Content:** Videos/files linked below, worksheet(s) in Appendix

**Technology:** Access to YouTube





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## IMPLEMENTATION (LESSON PLAN)

### ENGAGE

1. As a teacher demonstration, place two clear glasses of water side-by-side in the front of the room so that they are visible to students. One glass should have several ice cubes (3/4 full of ice). The other glass should have no ice.
2. Ask students to make observations in their notebooks. Allow students to touch the glass if they ask to do so. They should list the difference between the two glasses and notice that only the glass with ice has condensation on the outside.
3. In order to have students understand that the condensation on the outside of the glass with the ice is due to water vapor in the room and not water from inside of the glass, ask students to design an investigation that demonstrates where the condensation is coming from. Teacher may hint to students to cover the glass. Another method would be to add food coloring to the glass. Explain to students that the temperature that the water vapor begins to condensate on surfaces is called the "dew point."

### EXPLAIN

- In small groups have students research common sources of water vapor in the home. Students should find on their own the following sources: people, pets, plants, clothes washing and drying, house foundation, showers and bathing, dishwashing, cleaning and cooking. Students should document the following and add more sources as necessary.

Source of Water Vapor	Description of how the vapor is released into the home	Amount
1.		
2.		
3.		

### EXTEND/EVALUATE

1. As a whole group, ask students to brainstorm examples of mold. Have students complete a KWL chart.
2. Watch the episode on mold and moisture health: <http://wxtvonline.org/2011/01/mold/>
3. Have students read the *Mold, Moisture, and Your Home* PDF booklet (<https://www.epa.gov/sites/production/files/2016-10/documents/moldguide12.pdf>) and answer the worksheet questions.
4. Have students finish the KWL chart, completing the L column.

## RESOURCES/LINKS

Classification Guide to Common Mold Types

<https://www.moldbacteria.com/mold-types.html>

The Effect of Indoor Humidity on Water Vapor Release in Homes

[https://web.ornl.gov/sci/buildings/conf-archive/2007%20B10%20papers/071\\_TenWolde.pdf](https://web.ornl.gov/sci/buildings/conf-archive/2007%20B10%20papers/071_TenWolde.pdf)

Home Health Hazards

<https://fyi.extension.wisc.edu/house/about-the-house/home-health-hazards/>





## RESOURCES/LINKS (CONTINUED)

Moisture Problems

<https://fyi.extension.wisc.edu/house/about-the-house/moisture-problems/>

Mold, Moisture, and Your Home pdf booklet from the EPA

<https://www.epa.gov/sites/production/files/2016-10/documents/moldguide12.pdf>



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