



UNIVERSITY OF
FLORIDA

Florida Cooperative Extension Service

Fact Sheet EES-64

July 1991



Say Goodbye to Mildew and Save Energy: Agent's Guide¹

Virginia Peart²

INTRODUCTION

Energy conservation has had little emphasis during the past ten years or so; however, during the stressful period of the 1970s when power outages occurred there was a flurry of activity to produce educational materials for a public eager for guidance in their conservation efforts. As a result, few of the consumer publications sought to involve their intended audience in what "conservation" really should be. The intent is not for people to lose the service the energy was providing in any particular case, but rather to provide the service equally well with the least expenditure of energy.

Energy conservation guidelines for air conditioning use were developed in the midwestern and northeastern states where humidity levels are low much of the year. In Florida, the application of guidelines that emphasize such techniques as nighttime ventilation, higher thermostat settings, and ceiling fan use can lead to problems with mildew, corrosion, odor development and cleaning problems. The result for Floridians has been confusion and loss to mildew and other moisture related damage.

Repainting, refinishing and replacing mildew and moisture damaged furnishings and household items is

costly in energy terms, because energy is consumed by these processes.

More recently, we have come to recognize the problem of solid waste disposal. Reduction of unnecessary waste and associated energy costs can be promoted by protecting a home and furnishings from mildew and moisture damage.

Preventing mildew and moisture problems is safer and more energy efficient than the repetitive clean-up process with hazardous chemicals that is required when moisture management is misunderstood or neglected and mildew occurs.

The two companion lessons are designed to help both year-round Florida residents and those seasonal residents who go north for the summer.

PURPOSE

To provide Florida residents information on both direct and indirect ways to conserve energy while providing air conditioning comfort and protection of their homes from mildew and other moisture related problems.

1. This document is Fact Sheet EES-64, a series of the Florida Energy Extension Service, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: July 1991.
2. Virginia Peart, Associate Professor and Extension Housing Specialist, Home Economics Dept., Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611.

The Florida Energy Extension Service receives funding from the Florida Energy Office, Department of Community Affairs and is operated by the University of Florida's Institute of Food and Agricultural Sciences through the Cooperative Extension Service. The information contained herein is the product of the Florida Energy Extension Service and does not necessarily reflect the views of the Florida Energy Office.

The Institute of Food and Agricultural Sciences is an equal opportunity/affirmative action employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap, or national origin. For information on obtaining other extension publications, contact your county Cooperative Extension Service office.
Florida Cooperative Extension Service / Institute of Food and Agricultural Sciences / University of Florida / Christine Taylor Stephens, Dean

CONTENT

This training has been designed in two components.

Component I

"Say Goodbye to Mildew and Save Energy," encompasses indoor moisture management techniques for the permanent Florida resident that will result in energy conservation and the prevention of mildew growth. Component I consists of a transparency set for presentation and participant's fact sheet that reviews the information presented.

Component II

"Closing Your Florida Home," provides instruction to seasonal residents or those taking an extended leave for the proper procedure in preparing their home to both prevent mildew growth and conserve energy during their absence. Component II uses a video for presentation that is accompanied by the participant's fact sheet EES-66 *Closing Your Florida Home*.

COMPONENT I - SAY GOODBYE TO MILDEW AND SAVE ENERGY

Introduction

The transparency master set presents information about mildew and mildew growth conditions, indoor moisture sources and steps to decrease indoor moisture production and procedures that can be used to prevent mildew growth indoors. Attention is brought to energy conservation at appropriate places in the script. The script and transparency set can be customized to your county or customized to accommodate a particular audience or time-frame.

To Customize

From the map provided, select a weather station nearest your county and use the corresponding transparencies and script (#16 and #19).

Supplemental Sections

Sections on chemical mildew inhibitors, desiccants, mildew cleaning products and corrosion may be incorporated into the presentation if desired. If these sections are used, begin at slide 29, omitting slide 29, insert desired section or sections and finish

with slides 33 and 34. Also, if these sections are used, displays (suggestions follow) and a corrosion board may be useful for examples and demonstration.

Suggested Audiences

The materials for this lesson are appropriate for new or permanent Florida residents and might include:

- Members of a homemaker's club.
- Participants from other classes.
- Home economics classes in public schools, colleges or technical schools.

Advertising and Marketing

- A feature article in the local newspaper.
- Include a course announcement at newcomer's clubs or the Chamber of Commerce.
- The county library is an excellent advertising location, especially if there is a large retiree population in your community.
- Advertise through your newsletter or flier and newspaper announcements.
- Radio announcements can be used to advertise an upcoming program or serve as public service announcements.

Radio Announcements

"Smart Tips" can be used to publicize programs and materials on mildew control and energy conservation. Suggested announcements are:

"Mildew and moisture problems can be managed in energy efficient ways. The following "Smart Tip" is brought to you by (your name), your (County) County Extension Home Economist."

Tips

Choose from these three smart tips or make up some of your own.

- Keeping your home CLEAN AND DRY is your best defense against mildew growth and damage.

- There are 3 mildew hot spots in Florida homes. They are the bathroom, the bedroom and closets. Use energy efficient methods to control moisture and mildew problems in these mildew hot spots.
- Opening windows and doors can frequently add to mildew growth and moisture damage in Florida homes and increase energy use.

End with: Contact your (County) County Cooperative Extension Office about a program and information to help control mildew and save energy.

Preparation for the Lesson

The lesson leader should be thoroughly familiar with the information presented in the script and the participant's fact sheets.

Select appropriate weather slides and script for your area by determining which weather station is closest to your county or city from the map that follows.

Decide if section(s) on chemical mildew inhibitors, desiccants, mildew cleaning products and/or corrosion will be used.

Using the transparency masters, produce transparency overheads. The transparency set should be reviewed and the script read. Time this procedure, being sure the pace will allow enough time for the participants to absorb the material and ask questions without the lesson becoming slow.

Make copies of the question sheet and evaluation form.

The Lesson

Objective

Participants will learn how to control indoor moisture without excessive energy use, and thereby prevent mildew growth and damage to their homes. Participants will also learn where to obtain information to clean mildew growth if presently found in their homes.

Presentation

Introduction

Welcome the participants and give them an overview as to what they can expect of the program. In your presentation you will cover:

- What is mildew? What makes it grow?
- How to prevent mildew growth.
- Why moisture is the culprit.
- Why moisture gets high in your home.
- When to use ventilation or air conditioning.
- Easily understood facts about humidity and weather in your part of Florida.
- How furnishings in your home can add to moisture problems.
- And some important How-Tos for preventing mildew problems in bathrooms, closets and bedrooms.

Introductory Questions

The question sheet can be handed out as people come in to the meeting or after they are seated. Have them mark their answers before you begin your presentation. You may say something like:

"Please answer the following True/False questions. Don't worry if you are unsure about the answers. The program will provide explanations for all of the questions. Hold on to your questions and we can discuss the answers later."

Transparencies

The script for the transparency set will take approximately 30 minutes to deliver.

Discussion

Following the delivery, go over the questions, and discuss the answers. Ask for additional questions participants may have.

Hand out the fact sheet that accompanies this program. This will serve as a reference for the participants use at home. Go through the fact sheet to further reinforce the concepts learned. Ask for comments and questions.

Evaluation

Ask participants to fill out the evaluation sheet. This can be printed on the back of the question sheet.

Question Sheet Key

1. False. Mildew spores are everywhere and it is impossible to rid a house of spores.
2. True.
3. False. Opening a window can bring in humid air. It would be better to use the exhaust fan to pull conditioned air from the rest of the house.
4. False. Mildew hot spots are bedroom, bathroom and closets.
5. True.
6. False. Condensing moisture from humid air can use more energy than is needed to reduce to air temperature only.
7. True. Because air can hold more moisture as it warms, the relative humidity goes down even though the actual amount of moisture in the air is about the same.
8. True.
9. False. All Florida counties have some nighttime lows higher than 55 degrees F between these months, thus the indoor RH could be above 60 percent.
10. False. At Dew Point 75, air brought into a home would be saturated with moisture.
11. True.
12. False. Mildew inhibitors are toxic to humans and pets.

Supplemental Materials

If you wish to include the sections on chemical mildew inhibitors, desiccants, cleaning products and corrosion, you may want to prepare displays and a "corrosion board" to emphasize your presentation.

Use of Chemical Mildew Inhibitors

There is no product that will kill mildew and prevent its return. Keeping materials clean and dry is the best defense in controlling mildew growth.

The active ingredients in chemical mildew inhibitors are toxic and are regulated fungicides as defined by the Federal Insecticide, Fungicide and Rodenticide Act. By Federal law, ANYONE using these products must adhere to the recommendations for use. Inhaling their fumes must be avoided and precautions must be followed to prevent unwanted exposure to humans and animals. In addition, some household materials can be damaged by exposure to chemical mildew inhibitor fumes.

For more information, see H-99, *Chemical Mildew Inhibitors. Should I Use Them? How?*

Chemical Mildew Inhibitor Display

- Paraformaldehyde products.
- Paradichlorobenzene products.
- Copies of H-99 *Chemical Mildew Inhibitors. Should I Use Them? How?*

Questions

Questions that may be added to the question sheet:

1. The use of chemical mildew inhibitors are a safe and effective way for preventing mildew growth.
2. Steps must be followed to prevent the escape of fumes from chemical mildew inhibitors into areas where people or animals may become exposed to these fumes.

Key:

1. False. Fumes from chemical mildew inhibitors are poisonous. Extreme caution and care must be followed when using chemical mildew inhibitors.
2. True.

Use of Desiccants

Desiccants work by absorbing moisture from air. These compounds are effective only in small, well-sealed areas.

Silica gel and alumina can absorb moisture up to approximately half their weight. These products should be placed in an open container and placed on the floor or shelf. Once these products have become saturated with moisture, they can be dried in a vented oven at 300 degrees F and reused. It should be noted that these products will feel dry to the touch when saturated.

Calcium chloride can absorb several times its weight in moisture. However, as it absorbs moisture it liquifies and can not be reused. This product should be spread over a screen or some other device that will allow the liquid to drain below the granules. Caution should be used with this product as calcium chloride can damage fabrics. (HE-3042 *How to Prevent and Remove Mildew*)

Desiccant Display

- Calcium Chloride products.
- Silica Gel products.
- Activated Alumina products.
- Copies of HE-3042 *How to Prevent and Remove Mildew*.

Questions

Questions that may be added to the question sheet:

1. A desiccant placed in a musty Florida closet can be expected to dry the closet and stop mildew.
2. Desiccants can protect humidity-sensitive items that are enclosed in a small, sealed space or container.

Key:

1. False. The amount of moisture desiccants can absorb is small compared to the amount of moisture that can be held in the air and clothes in a closet.

2. True.

Use of Cleaning Products

When cleaning mildew, it is important not only to remove mildew but also to protect the materials the mildew has been on.

Cleaning Product Display

- Isopropyl alcohol, any brand.
- Household chlorine bleach, any brand.
- Trisodium phosphate (TSP).
- Copies of HE-3042 *How to Prevent and Remove Mildew*.

Questions

Questions that may be added to the Question Sheet.

1. Common rubbing alcohol can be used on all materials and surfaces to remove mildew.
2. Common household bleach removes mildew and prevents its return

Key:

1. False. Rubbing alcohol can be used on some materials and surfaces. HE-3042 describes which materials are safe. When unsure, test in an inconspicuous spot.
2. False. Bleach will kill growing mildew, but remember, mildew spores are everywhere and once the conditions are right, mildew will grow again.

Avoiding Corrosion

In addition to mildew, corrosion is a serious problem related to high humidity. Cleaning and replacing rusted and corroded items also represents a high energy cost to families. Prevention of problems is easier when people understand corrosion causes and methods of protecting metals as discussed in HE-3141, *Avoiding Corrosion Problems in Florida*. In addition to the transparencies on Corrosion provided, you may want to display items showing corrosion or tarnishing for discussion. You can ask volunteers to

help you acquire items for the kit and put it together before your program.

Corrosion Display

- Corroded and tarnished metal items.
- Corrosion cleaners. Lemon juice or vinegar and salt.
- Commercial cleaners.
- Have someone clean silver as prescribed in HE-3141 and show before and after pieces. (Silver to be cleaned this way should not have dark oxide pattern decoration.)
- Copies of HE-3141 *Avoiding Corrosion Problems in Florida*.
- Corrosion Board (The following counties have Corrosion Boards that can be borrowed: Alachua, Bay, Lee, Orange, Palm Beach, St. Johns and Volusia. A control Board to show the original condition of the metals is available for comparison. Contact the Extension Housing Specialist at the University of Florida. By displaying a corrosion board from a county near you, you can demonstrate the effects of weather in your area on metals.)

Questions

Questions that may be added to the Question Sheet.

1. Painting over a rusty spot on an appliance will prevent further rusting.
2. Corrosion can readily occur when two different metals are used together in a humid environment.

Key:

1. False. Rust can be porous and will continue to form unless first removed. Then the area must be covered with paint or lacquer.
2. True.

COMPONENT II CLOSING YOUR FLORIDA HOME

Suggested Audiences

The materials for this lesson are appropriate for seasonal Florida residents who vacate their homes during the summer months or for extended periods of time. You audience might consist of:

- Condominium and mobile home owners.
- Condominium or mobile park managers associations.**
- Customer service representatives from the local utility company.**
- Traditional extension home economics groups.

** Contact with managers and customer service representatives has the potential for providing you with more clientele if they will refer customers to the county extension home economist.

Advertising and Marketing

- A feature article in the local newspaper.
- Fliers, newsletters, newspaper announcements.
- The public library.
- Video stores may have free check-out services for videos containing public information.
- Radio announcements can be used to advertise an upcoming program.

Radio Announcements

Some suggestions are:

1. If you are preparing to return to cooler summer environs, plan ahead in order to protect your home from mildew and moisture damage.
2. Running your air conditioner for 2 hours during the early morning hours is an energy efficient way to reduce the chances of mildew damage while you are away for the summer.
3. Keeping your Florida home CLEAN AND DRY during a long summer's absence is the KEY to

preventing moisture and mildew damage in your home.

4. If you are leaving your Florida home for the summer, NEVER leave any food in your refrigerator. To keep your refrigerator smelling clean and fresh and conserve energy, clean it, unplug it, and prop the door open before you leave.
5. If you are leaving your Florida home for the summer, give you house a THOROUGH security check. Check that window and door locks are working properly. Trim bushes and shrubs low enough to prevent hiding spots for intruders.

Tips

(Follow with) "This has been a Smart Tip from your (County) County Extension Home Economist." You may at this time provide information about your "Closing Your Florida Home" program.

Preparation for the Lesson

The lesson leader should review the video and be thoroughly familiar with the information in the leader's guide and participant's fact sheets. Review the question sheet and evaluation form.

The Lesson

Objective

Participants will learn through the video how to prepare their homes for an extended leave of absence. They will learn the steps to take to insure that their residences will be free of mildew and other damage caused by humidity and how to protect their home from intruders. By following instructions for controlling moisture and by operating their air conditioning correctly, they can also conserve energy.

Presentation

Introduction

Welcome participants and give them an overview as to what this program will cover. You may say something like:

"It's always pleasant to return to cooler environs once hot, humid weather arrives in Florida. There is also a concern. Can you be sure when

you next return that everything will be 'ship shape,' no mildew horror stories, and no astronomical electric bills? To be sure, you need a plan to remind you what to do and when to do it. Bill and Betty are going to show you how they manage. You will have a handout to help you make your own plans, too."

Video

The video is approximately 20 minutes.

Discussion

Following the video, ask for questions. Hand out EES-66 *Closing Your Florida Home* fact sheet. The information in the fact sheet is essentially the same as in the video except there is more information and they will want to develop their own time schedule for closing their homes.

Evaluation

Evaluation of the program may be obtained by the following survey. If you choose to leave a copy of the video in the library or in the free check-out services at a video store, a tally of check-out will serve as an indicator for frequency of viewing.

DEFINITION LIST

Chemical Mildew inhibitor. Chemicals, paradichlorobenzene or paraformaldehyde, for example, which can kill mildew. However, once conditions become optimal for mildew growth, it will recur because mildew spores are always available.

Corrosion. The naturally occurring process by which a metal is returned to its oxidized state as an ore.

Desiccants. Chemicals such as calcium chloride, silica gel or activated alumina that absorb moisture from air. Since many quarts of moisture must be removed each day from a home by air conditioning, the use of these chemicals will not be effective unless the area to protect is small and tightly enclosed.

Dew Point Temperature. The dew point temperature is the temperature at which moisture in air will begin to condense or form droplets of water. The air at that point is saturated with moisture. The relative humidity is 100%.

Hygroscopic. Any material that absorbs water or moisture. In a house, these materials include the wood used in construction or furniture as well as cloth furnishings.

Infiltrated Air. Outside air that comes into a house. Infiltration sites can be open doors and windows, but also may be the tiny cracks and crevices around doors, windows, electrical outlets, air conditioners and construction joints.

Mildew. A type of mold. Mildew spores are the 'seeds' from which mildew grows and are ever present in our environment.

MILDEW ALERT Area. That temperature and relative humidity range of 70-80 degrees F and 60-80 percent RH at which both human comfort and mildew growth occur.

Relative Humidity (RH). Relative humidity is a ratio of the actual amount of moisture in air to the maximum amount of moisture air can hold at any temperature. Relative humidity is expressed as a percentage.

Say Goodbye to Mildew and Save Energy

True or False

- T F 1. If people were really clean they wouldn't have any mildew spores in their home.
- T F 2. Mildew likes organic materials like leather and paper to grow on.
- T F 3. One of the reasons Florida homes have mildew in their bathrooms is because people don't open bathroom windows to air the room out after bathing or showering.
- T F 4. It is very rare to have mildew in bedrooms.
- T F 5. Warm air can hold more moisture than cool air.
- T F 6. Dry air requires more energy to cool than humid air.
- T F 7. Generally, the relative humidity is lower on a summer afternoon than it would have been at daybreak.
- T F 8. The nighttime low temperature can be a good estimate of the dew point temperature anytime of the following day.
- T F 9. In (County) County the weather isn't really very humid from October until June.
- T F 10. To avoid mildew problems it's a good idea to open windows and doors to ventilate your home anytime the temperature drops below 75 degrees F at night.
- T F 11. The mildew hot spots in most Florida homes are bathrooms, closets and bedrooms.
- T F 12. Chemical mildew inhibitors are safe to use regularly to stop mildew growth.

Say Goodbye to Mildew and Save Energy

Evaluation

This Cooperative Extension Program has been designed to help you understand what makes mildew grow and how you can reduce this problem in your home and save energy, too.

During the "Say Goodbye to Mildew" program you have seen many ways to reduce the risk of damage to your home and belongings caused by mildew and moisture. Have you learned some tips to protect your home from mildew problems? List 3 or more measures that you can use. Place a star beside the procedures that you are planning to use for the first time.

1. _____
2. _____
3. _____
4. _____
5. _____

How would you rate the information presented in the "Say Goodbye to Mildew and Save Energy" class? Circle the number by the statement that best describes your rating.

- 4 The information and program were EXCELLENT. I learned many new tips on controlling moisture and avoiding mildew.
- 3 The information and program were GOOD. I learned some new tips on controlling moisture and avoiding mildew.
- 2 The information and program were FAIR. I learned at least two new tips on controlling moisture and avoiding mildew.
- 1 The information and program were POOR. I learned nothing new on controlling moisture and avoiding mildew.

Closing Your Florida Home

The (County) County Cooperative Extension Service Home Economics Program hopes your stay was both enjoyable and memorable. We extend our wishes for your safe return and for a super summer! Help us to improve our Extension Home Economics programs by sharing the following information with us. We appreciate and welcome any of your comments.

What state do you call "home"? _____

How many years have you been a seasonal Florida resident? _____

What month do you come to Florida? _____

What month do you leave Florida? _____

Is your Florida home located near the coast or other body of water or a river? Yes ____ No ____

Which of the following best describes your Florida home?

Check only one answer.

- _____ Single family detached home
- _____ Mobile Home
- _____ Duplex (2 homes attached)
- _____ Tri-plex (3 homes attached)
- _____ Quadra-plex (4 homes attached)
- _____ Condominium - low rise (less than 3 stories high)
- _____ Condominium - high rise (3 or more stories high)

Do you belong to a homeowner/condominium association in Florida? Yes ____ No ____

Many Florida residents return home after an extended absence only to find extensive damage from mildew, hurricane, or robbers. Have you ever experienced any of these problems in your Florida home?

- _____ Insect or rodent damage
- _____ Water damage from broken pipes
- _____ Carpet or flooring damage from mildew
- _____ Furniture damage from mildew
- _____ Paint or wallpaper damage from mildew
- _____ Refrigerator/freezer damage from power outage
- _____ Loss of property from burglary or fire
- _____ High utility (electricity or water) bills
- _____ Other damages (Explain) _____

Closing Your Florida Home**Evaluation**

During "Closing Your Florida Home" you have seen many ways to reduce the risk of damage to your home and belongings while you are away. How do you plan to keep your home safe, clean and dry after hearing these tips? List 3 or more preventive measures that you plan to take prior to closing your home this year. Place a star beside the procedures that you are planning to use for the first time.

1. _____
2. _____
3. _____
4. _____
5. _____

How would you rate the information presented in the "Closing Your Florida Home" class? Circle the number by the statement that best describes your rating.

- 4 The information and program were EXCELLENT. I learned many new tips on closing my home for the season.
- 3 The information and program were GOOD. I learned some new tips on closing my home for the season.
- 2 The information and program were FAIR. I learned at least two new tips on closing my home for the season.
- 1 The information and program were POOR. I learned nothing new about closing my home.