



**KY-A-Syst for the Home**  
Environmental Stewardship  
for Homeowners

## Household Wastewater Treatment and Disposal

### Teaching Guide

#### Introduction:

Wastewater treatment systems are designed to remove contaminants before they enter groundwater or nearby lakes and streams. Wastewater treatment is usually out of sight and out of mind; so most people don't worry about it until a problem occurs. However, it is easier to take simple precautions to prevent problems and eliminate the need for costly repairs.

The basic septic system consists of a septic tank and drain field. Wastewater from your home enters the septic tank where the solids settle to the bottom and are fed on by bacteria, which break the solids down. The liquid then flows into a distribution box, which directs flow into the drain field. The drain field is composed of underground pipes in shallow beds of gravel or soil. The liquid seeps into the gravel or soil through small holes in the drain field pipes.

It is important to know where your septic system is located. Mark the location of your septic tank on a map of your house and yard, and keep the map with your house records. The drain field should be at least 100 feet from wells, wetlands, or streams to reduce the chance of contaminating water supplies.

It is recommended that single-family dwellings in Kentucky have 1,000-gallon septic tanks. The septic system should be large enough to handle your home's maximum occupancy. If the system is not big enough, then wastewater will not be adequately treated or the system may break down. Septic systems should last 15 to 40 years, depending on how well they are suited to the site and maintained.

Regular pumping is the key to maintaining your septic system. The general rule is to have the tank pumped by a licensed pumper every three to five years, depending on the size of tank, amount of wastewater generated, amount of solids in the wastewater, and age of the system. It is also necessary to protect your drain field. Compacted soil doesn't have enough oxygen for microbes to digest waste efficiently. Driving over the drain field, construction over the drain field, or planting deep-rooted trees and shrubs over it will cause problems.

You should suspect septic system problems if a drain is backed up or slowed, the ground is spongy, lush plant growth occurs, or your family suffers repeated intestinal illnesses. It is important to act quickly and make repair decisions based on lowering risks to your health and the environment.

Tissues, diapers, baby wipes, sanitary napkins, tampons, cigarette butts, dental floss, hair, food wastes, and coffee grounds should never be flushed down the toilet. These materials do not break down easily, and they will cause your septic tank to fill up faster. Paints, solvents, acids, drain cleaners, oils, and septic tank chemicals should also not be poured down the drain. They can pass through the septic system and contaminate the drinking water supply.

Conserving water allows more time for solids to settle out, reducing their chances of being carried into the drain field. Low-flow toilets, shorter showers, fixing leaks, running the washing machine and dishwasher only when full, and turning off water when brushing teeth or shaving are all good ways to reduce the volume of water you use.

### **Focus on Children:**

Small children are at high risk for illnesses caused by water contamination. Water pollution often comes from improperly treated wastewater or failing septic systems. Children like to wade in streams, which may be polluted. They also frequently handle pets that may have been in polluted water. Children need to develop the habit of washing their hands after playing outdoors or with pets. This will help reduce the risk of illness. Symptoms of illnesses caused by polluted water range from diarrhea, fever, and tiredness to internal parasites, stomach cramps, and sudden weight loss. Illnesses like Hepatitis A are often traced back to polluted water.

### **Lesson Purpose and Objectives:**

**Purpose:** This lesson is designed to assist people in understanding wastewater treatment and the need for taking proper care of septic systems.

**Objectives:** This lesson guide contains a lot of information on septic system parts, functions and maintenance. It may be difficult to cover all the material in one session. Therefore, you are encouraged to select a program based on the type of audience you are serving and their needs. It is best to select and focus on *only two or three* of the following objectives.

Know where your septic system is located and have a map of its location.

Learn how close the drain field is to any well or surface water.

Ensure that your septic tank is adequate in size and is pumped on a regular basis.

Understand the activities that might damage your drain field.

Realize signs of trouble and the importance of reacting quickly.

Know what should and shouldn't be put into your septic system.

Learn what water conserving practices you can easily implement.

Other (Please list in the space below):

## **Suggested Resources & Materials:**

The following items are available for your use in teaching this lesson. Select and use resources according to your program focus and needs. Resource materials are available from the ENRI Resource Center, 233 Scovell Hall, University of Kentucky unless otherwise noted. County agents should request these items in advance.

### Publications & Fact Sheets

Numbered-series Extension publications available through order entry :

- *Maintaining Conventional Septic Systems* AGR-166
- *Septic Systems for Homeowners* AGR-167
- *What Do You Need to Know About Wastewater* IP-67

ENRI Fact Sheets – camera-ready copies available through the ENRI web site at <http://www.ca.uky.edu>

- *What is a Septic System and How Does it Work?* ENRI-400  
(Basic information. Low reading level.)
- *The Do's and Don't of Taking Care of Your Septic System* ENRI-401  
(Basic information. Low reading level.)
- *Your Septic System Isn't Working Right?* ENRI-402  
(Basic information. Low reading level.)
- *Water Pollution from Sewage-How Can it Affect My Health* ENRI-404  
(Basic information. Low reading level.)
- *Municipal Wastewater Treatment Systems* ENRI-405

Kentucky Division of Water Fact Sheet – print copies are available by request at Regional Division of Water offices or by calling (502) 564-3410; a web version is available at <http://water.nr.state.ky.us/dow/septicgpp.htm>

- *Homeowner's Septic System Guide and Record Keeping Folder: A Groundwater Protection Plan for Residential Septic Systems*

Videos (Available through the Ag. Communications video library.)

- *Water Quality Basics* (VEI-1385)  
(Segment 3 - Septic System Care and Maintenance)
- *Septic System Owner's Guide* (VAE-0650 & VHD-0654)
- *Care and Feeding of a Septic System* (VEI-1288)
- *Your Septic System: A Guide for Homeowners* (VEI-1289)
- *Wastewater Management of Unsewered Areas* (VEI-1382)
- *Water Conservation in the Home* (VHD-0202)

## Suggested Resources & Materials: (cont'd.)

### Display

- *Caring for Your Septic System.* Access to sewers varies greatly across the state, and many Kentuckians rely upon septic systems for household wastewater disposal. This exhibit shares how a septic system works, and offers both “Do’s and Don’ts” for septic system use and care. The exhibit is a companion to the low reading level fact sheets listed previously, but could be used independently. *Designed to fit a small exhibit board – approximate size 26” tall x 80” wide.*

### Teaching Portfolio

- *Septic System Use and Care-Why Does It Matter* - Flip chart visual designed to be used one-on-one or with a very small group. Consists of dialogue and illustrations. (Excellent for low literacy, EFNEP, FDM and family settings.)

Other: (Please specify below.)

## Suggested Teaching Techniques and Activities:

Select only those activities that will help you teach the lesson. Limit selection according to your program focus, audience, and length of lesson.

- Use the transparencies to give an overview of safe management of septic systems. Encourage discussion as you present the information.
- Have the participants read the Ky-A-Syst for the Home publication *Household Wastewater: Septic Systems and Other Treatment Methods*. Go back through the publication and have them answer the questions in the boxes. Suggest participants record all B and C responses and list changes they plan to make from information in the publication or from other sources. They can do this on the Action Checklist on Page 5. Encourage them to set target dates for taking action. Suggest that they review the checklist from time to time to see if any responses have changed.
- Show the video *Care and Feeding of a Septic System*. Discuss with the audience whether they do anything to care for their septic tank. Use the fact sheet *Do’s and Don’ts* to stimulate discussion. Go over the fact sheet *What is a Septic System & How Does It Work?*
- If time is short, show the *Septic System Care and Maintenance* segment of the *Water Quality Basics* video. Briefly discuss the basic do’s and don’ts for septic systems.

### **Suggested Teaching Techniques and Activities: (cont'd.)**

- Invite someone from a local septic system pumping company to come and talk about taking care of the septic system. Have them discuss the proper place to locate a new system and how big the tank should be.
- Show the video *Water Conservation in the Home*. Discuss with the group which of the water conservation practices that they use in their home. Bring in a low flow showerhead to show to the group. Talk about low-flow toilets and water saving faucets.
- In a small group setting, use the flip chart visual *Septic System Use and Care – Why Does It Matter*. Emphasize the importance of maintenance to prevent problems.
- Arrange for a tour of a municipal sewer system. Discuss how wastewater gets to the facility. Talk about alternative small wastewater system techniques such as mound systems and constructed wetlands.
- Other: (Please specify below.)

### **Suggested Evaluation Techniques:**

Select the technique(s) best suited to the information you would like to obtain from your audience. Immediate evaluation will provide reaction to the presenter and program materials. Delayed evaluation will give a better indication of changed behavior and attitudes.

- ◆ At the close of the program, ask each participant to name *one* thing they learned from the lesson.
- ◆ At the end of the program, ask each participant to list something they will go home and do as a result of the lesson. Have them write the item on a piece of paper with their name and the date of the lesson. Save the papers and several weeks/months later survey the group to see if they actually did it.
- ◆ Hand out a copy of the *Help Us Serve You Better* evaluation form. Ask participants to complete the form and leave it in a specific place as they leave.
- ◆ Return to the group several weeks later and ask them to fill out the Follow-up Feedback Form and collect them as they leave. If you cannot return to the group in person, contact a representative number of the participants by phone and collect the data requested on the Follow-Up Feedback Form from each.
- ◆ Other: (Please specify below.)

**Reporting Impacts (*Information for County Extension Agents*):**

Use the following priority indicators and program accomplishment (PAC) codes when reporting impacts as a result of this program. Information taken from the FY01 PAC and priority indicators lists.

PAC Code 610 - Indicator:

- Number of individuals adopting practices that insure safe water.

Prepared by Denise Hoffman, Temporary Extension Associate and Kim Henken, Extension Associate for Environmental and Natural Resource Issues.

This material was developed through funding provided by the U.S. Department of Agriculture, Cooperative State Research, Education and Extension Service, Healthy Homes Project and the U.S. Environmental Protection Agency, Region IV, Children's Environmental Health Project.

*Educational programs of the Kentucky Cooperative Extension Service serve all people regardless of race, color, age, sex, religion, disability or national origin.*

May 2001