COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY • COLLEGE OF AGRICULTURE

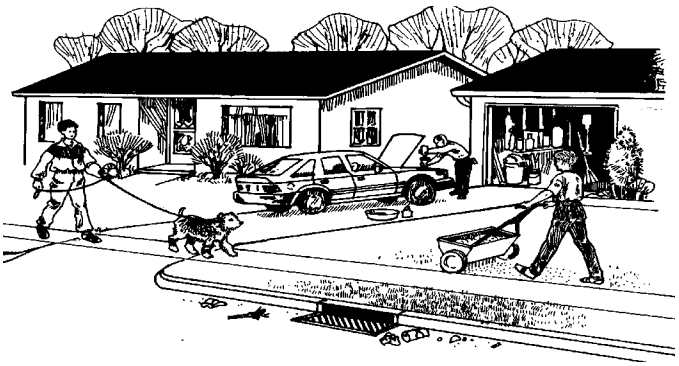
KY-A-Syst for the Home

Environmental Stewardship for Homeowners

Site Assessment: Protecting Water Quality around Your Home

Why Should You Be Concerned?

Activities in and around your home can have lasting effects on water quality. Becoming familiar with your surrounding homesite is the first step to protecting our delicate environment. Characteristics of your homesite, such as soil type, geology, depth to groundwater, and nearness to surface water, can influence the effects these activities have on water both below ground and in nearby lakes, streams, and other bodies of water. It is important to assess the features of your homesite so that you are aware of possible risks to your health and the environment. By paying attention to how you manage activities in and around your home, you can protect your outdoor sources of water and the water you drink.



Good management of activities around your home can help protect the quality of your water.

How Can KY-A-Syst Help?

This publication leads you through an evaluation of your home and property to determine pollution and health risks. After you have read this publication, walk around your home and property and answer the questions in the boxes, circling the answers that best apply. Your answers will help you become familiar with the physical characteristics of your homesite and identify potential problems so you can reduce your risk of polluting your water resources.

If you answer all questions with choice A, you have few risks to water quality around your homesite. If you answer any question with choice B, there may be a problem. If you answer any with choice C (in questions with three choices), you will want to consider making changes.

If you would like further help in assessing your homesite and its water quality, contact your county office of the Cooperative Extension Service.

Soil and Groundwater

Soil plays an important role in determining where potential contaminants go and how water moves. Soils have distinctive properties that permit water (and potential contaminants) to percolate through soil or run off at variable rates.

Soil particle size influences which pollutants may reach groundwater. Clay soils, which are composed of tiny particles, slow the downward movement of water and sometimes even stop it completely. However, a clay-dominated soil may cause problems by reducing downward or lateral water movement to the point that untreated wastewater comes to the surface. Sandy soils allow for rapid water movement because the particle size is much larger. Silty soils occupy the middle range. The ideal soil is a mixture of mid-size particles and fine particles. This mixture allows water to infiltrate but move slowly so that potential pollutants can be filtered.

It is important to consider the entire soil profile when evaluating how soil can affect water quality. As soil depth increases, soil type and particle size often change. In general, most of Kentucky is characterized by loamy topsoil (a mixture of particle sizes). Layers of smaller particles are found deep in the soil. They have a limiting effect on water movement. In many homesites, the topsoil or more loamy material has been removed from the naturally developed soil during construction. This removal may leave a more shallow soil depth and finer particles at the surface.

What type of soil do you have?

A. Silt/loam (midsize particles).

B. Clay (very tiny particles).

C. Sandy, with some gravel from bedrock (large particles).

Depth of Soil to Bedrock

The depth of soil to bedrock can influence risks to groundwater. In general, the deeper the soil, the farther water must filter before reaching groundwater. Deep soils offer a better chance for pollutants to be removed or broken down before reaching groundwater. Soils less than 3 feet deep pose serious risks for groundwater contamination. In Kentucky, it is important to remember the possibilities of breaks in the bedrock. These breaks are sinkholes that feed into underground streams that in turn feed directly into groundwater. This direct flow eliminates the chance for pollutants to be filtered from water by soil particles.

Your Homesite and Surface Water

During a storm, flooding, or even watering of your lawn, runoff can wash contaminants from the land's surface, polluting nearby surface water (lakes, rivers, streams, and estuaries). Eroding soil is also considered a water pollutant—water or wind can detach particles from bare soil and create runoff into nearby surface water. The pollutants carried into surface water pose threats to aquatic plants and animals as well as contaminate groundwater sources that many people direct to their homes. If your home is within 100 feet of surface water, you should be especially careful to prevent runoff of contaminants.

Homesite Slope

In addition to soil type and soil depth, the slope of the land surrounding your home can determine how water moves within the landscape. Steeply sloping land can cause contaminated water to flow directly into your sources of surface water and groundwater. If your homesite is located on steeply sloping land, keep the ground covered with vegetation and avoid activities that could increase the risk of water contamination. To help you understand your land, read below about the regions of Kentucky and look at the accompanying map.

How deep is your soil to bedrock?

A. My soil is more than 12 feet deep.

B. My soil is moderately deep (3-12 feet).

C. My soil is shallow (less than 3 feet deep).

How close is your homesite to a body of surface water?

A. My home is more than 100 feet away from surface water.

B. My home is 25 to 100 feet from surface water.

What is the slope of your homesite?

A. The land around my home is flat and often has puddles after a rainstorm.

B. The land around my home has gentle slopes.

C. The land around my home has steep slopes and fast runoff.

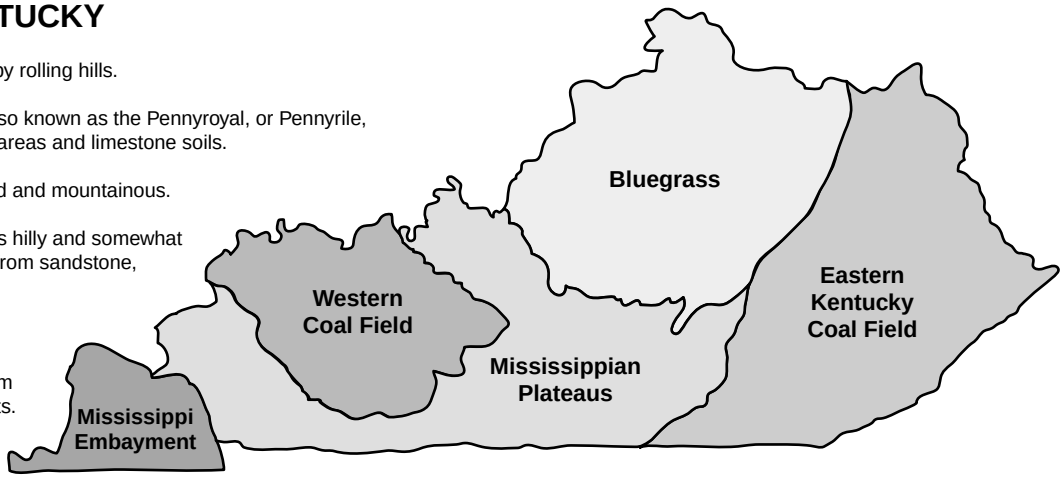
Making a Map of Your Homesite

By drawing a map of your homesite, you will take another step toward understanding your pollution risks. Your map will identify areas where you can minimize risks. Involving your children as you make your map will teach them the importance of clean water.

When drawing your map, keep an eye out for problem areas such as an improperly located septic system, storage tanks containing petroleum products, stockpiled animal waste, or areas of steep slope. These and other site characteristics can have major effects on the quality of your water.

REGIONS OF KENTUCKY

- Bluegrass–characterized by rolling hills.
- Mississippian Plateaus–also known as the Pennyroyal, or Pennyrile, characterized by sinkhole areas and limestone soils.
- Eastern Coal Field–rugged and mountainous.
- Western Coal Field–land is hilly and somewhat rugged, with soils formed from sandstone, shale, and limestone.
- Mississippi Embayment–characterized by flat land and fertile soils formed from Mississippi River sediments. Also know as the Purchase area.



Source: *Kentucky Atlas and Gazetteer*.

Don't forget about undiscovered buried items. Check with your town or city hall for information about current or previous industrial or agricultural activities in your area. If there are underground fuel tanks or other potential sources of contaminants that are uphill from your well, they could affect the quality of your groundwater.

Finally, put together both components of your assessment—answers to the questions in this publication and your map—to identify potential problem areas on your property. To protect your family's health and the environment, take steps to correct any problems you find.

Features to include when you draw a homesite map:

- ✔ Property boundaries
- ✔ House and garage
- ✔ Outbuildings, sheds
- ✔ Septic system, drain field
- ✔ Nearest surface water
- ✔ Water wells
- ✔ Dry or abandoned wells
- ✔ Heating oil, fuel storage tanks
- ✔ Building perimeter drains
- ✔ Lawn areas
- ✔ Vegetable and flower gardens
- ✔ Other cultivated areas
- ✔ Animal waste storage areas
- ✔ Roads, driveways
- ✔ Drainage ditches
- ✔ Non-penetrable surfaces (such as patios, sidewalks)

Sources for More Information About . . .

- **Soil Depth**
  – County soil survey from the Natural Resources Conservation Service (check local listing).
- **Geologic Features**
  – Kentucky Geological Survey (water resources, call 606-257-5500; publication sales, call 606-257-3896).
  – United States Geological Survey (on the Web at <http://www.usgs.gov>).
- **Current or Previous Agricultural/Industrial Practices**
  – City or town hall (check local listing).
  – County Cooperative Extension Service office (check local listing).

What Is the KY-A-Syst for the Home Program?

Home *A* Syst

The KY-A-Syst for the Home program is a series of publications that can help you be a good environmental steward and protect the health and well-being of your family. KY-A-Syst for the Home publications provide problem-solving information and list agencies that can provide help in specific areas.

This publication is based on *Home*A*Syst: An Environmental Risk-Assessment Guide for the Home* developed by the National Farm*A*Syst/Home*A*Syst Program (author Alyson McCann, University of Rhode Island Cooperative Extension) in cooperation with NRAES, the Northeast Regional Agricultural Engineering Service. Permission to use these materials was granted by University of Wisconsin, the copyright holder. Kentucky's modification of Home*A*Syst was coordinated by Kimberly Henken, Amanda Abnee, and Marla Hall. Technical editing was provided by William O. Thom and Jennifer Cocanougher. This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under special project number 99-EWQI-10515.

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