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Testing for Contaminants A Guide for the Home and Farm
Michigan State University Cooperative Extension Service
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Testing for Contaminants

A Guide for the
Home and Farm

Is my
water
safe
to
drink?

What
kind of
soil
do
I have?

Is this
silage
safe
to feed
to my
animals?



To answer these and similar questions, you may need to get some testing done. How do you decide which tests you need and who should perform them? There is no simple answer, but this guide should help you to make the best testing decisions you can.

Testing for Contaminants

A Guide for the Home and Farm

First of all, even a simple sounding question, such as “Is my water safe to drink?” can involve a lot of decisions on your part. No one test can detect all or even most of the possible chemicals and living organisms that might be in the water. Routine tests can tell you if the most common contaminants — e.g., bacteria and nitrates — are present in excessive amounts, but if you want to know about all the other possibilities — including pesticides and other organic chemicals — you should be prepared to spend large amounts of money and invest a lot of time.

Such extensive testing is rarely necessary. The following guidelines will help you avoid unnecessary testing and choose the most appropriate tests for your situation.

Testing Guidelines

- Decide why you want the tests performed and what you expect from the results. The more specific you can be, the easier and less costly it will be to perform the tests.
- Choose the initial contact organization most familiar with the types of testing you desire. (Initial contacts for each type of testing are listed at the end of this guide.)
- Discuss your situation with this initial contact so that you are aware of what analyses are available to you and what they can tell you.
- Don't take your own samples unless you are sure of the requirements for proper collection, preparation and shipping. Proper sampling procedures are critical to ensure accurate test results.
- After receiving your analytical results, discuss them with an appropriate professional, such as a sanitarian or physician, before taking further action. The numbers that are reported are meaningless by themselves and are easily misinterpreted.

Testing Concerns

Human health

If you are concerned about adverse health effects from environmental contamination, contact your local health department. Health department sanitarians or physicians can discuss your situation with you and recommend a course of action. This action may include a visit by health department personnel to investigate your concerns and to evaluate the need for testing.

If the situation justifies testing, analyses may be performed by the local health department, the state health department or a commercial laboratory. Local health departments usually can perform routine tests to evaluate the nature of the problem, whereas the state health labs and commercial laboratories are equipped for more specific and detailed tests.

The decision by the state or local health department on what environmental testing services will be provided to you is based on the severity of the potential health risks and the number of people who may be affected.

The testing services of the state health department are very specialized and can be accessed only by health professionals. Most state agencies carry out extensive testing for regulatory and enforcement purposes and have limited additional capability for on-demand testing.

Because of these limited resources, the health department may recommend that your tests be performed by a commercial laboratory.

In case of human illness, you should contact a physician first. In some instances, the physician may utilize Michigan Department of Public Health (MDPH) testing services for infectious agent identification. He/she may also use private medical labs that provide analyses of human tissues and fluids or refer you to hospital facilities. These services for testing and diagnosis of pathogens and toxicants in human body

fluids and tissues are available *only* from a physician working through a testing laboratory.

Animal health

If animal health is your concern, your first contact is usually a veterinarian. This holds for both companion and food animals. The veterinarian can provide routine tests needed for your animals. The Veterinary Clinical Center and Animal Health Diagnostic Laboratory (AHDL) at Michigan State University offer referral and testing services to veterinarians. In addition, the AHDL offers diagnostic and testing services directly to the public, mainly for food animal problems. Services include testing of animal fluids and tissues, and also testing of environmental samples, if they are a concern.

Agriculture

When you have problems or concerns of agricultural origin, contact your county Cooperative Extension Service office for consultation and referrals. If testing is indicated, you may be referred to a commercial laboratory or to MSU. MSU provides plant disease diagnosis, insect and nematode identification, plant tissue analysis, and physical and nutrient analysis of soil. Analyses of feed and plants for nutrient value or contaminant residues are available in many commercial laboratories.

Types of Tests

Water testing

Constituents of water include those of natural origin and those resulting from human activities. Common reasons for testing water may be the presence of unusual taste, appearance or odor, or the need to check the suitability of a new water supply for drinking, irrigation or other uses. Most routine water tests can detect common contaminants — e.g., iron, nitrates or bacteria — that are either esthetic or health concerns. Specialized tests are required to detect more unusual pollutants, such as pesticides or gasoline. Your local health department should be your first contact agency

for water issues. (For more details on water testing, see Extension bulletin WQ02, *Testing of Private Wells*.)

Soil testing

The analysis of soil for its nutrient content and physical properties is a valuable tool in crop and soil management. Soil classifications and nutrient evaluations are made to determine the compatibility of soil condition with the crops to be planted and the amount and type of fertilizer needed. For home gardeners, soil analysis provides guidelines on meeting the nutrient needs of lawns, fruits and vegetables. Analysis of your soil can also help you select the most effective and environmentally sound pesticide application rates for your conditions.

Concerns about the physical and chemical properties of your soil, as well as possible contaminants, should be directed to your county Extension office. Questions about soil testing needed for the proper installation of septic or water systems should be directed to your local health department.

Air testing

Most air testing is performed to detect particulates and volatile (easily vaporized) compounds that may pose an environmental and/or health threat.

If you suspect that the air in your home is contaminated by air particulates, such as asbestos fibers, or by volatile compounds, such as formaldehyde, you should contact your local health department. If it cannot provide test services, it can make referrals and may give you advice on what steps you can take to alleviate your concern.

When you are concerned about exposure to particulates or volatiles in the workplace air, you should contact the Michigan Department of Public Health. If you have any questions about outdoor air quality, such as nearby emissions or peculiar odors, the Michigan Department of Natural Resources is the first agency to contact.



Feed and food testing

Foods and feeds are usually tested to determine nutritional content and value or to detect contaminants, such as mold toxins or pesticides. Routine testing of commercially available foods and feeds is the responsibility of the Michigan Department of Agriculture (MDA) and is done to enforce regulations on nutritional content labeling and to determine if contaminants in foods and feeds exceed federal tolerance levels. Livestock growers commonly test feeds for nutritional content and value so they can formulate diets that will provide adequate nutrition for their animals. Foods grown privately by farmers or gardeners for human or animal consumption are not routinely tested by regulatory agencies.

In some instances, you may want to have food tested because of concern about contaminants that may cause some adverse health effect — e.g., pesticide residues in fruits and vegetables or bacterial contamination of dairy products. If you suspect contamination of commercial or privately grown food, contact the Food Division of the Michigan Department of Agriculture or your local health department. Contact your county Cooperative Extension Service office, the Michigan Department of Agriculture (Food Division) or local veterinarian if you need information about nutritional or contaminant testing of feeds.

Plant/insect/nematode testing

Plant testing services include identification, disease diagnosis, nutrient composition determination and some contaminant analysis. Diagnosis of crop diseases is helpful in controlling them and preventing future problems. Analysis of insects and nematodes is generally limited to identification of crop pests. Some inorganic and contaminant analysis of plants is done by private laboratories, while plant disease diagnosis and identification of plants, insects and nematodes is done at MSU. Before requesting this type of testing, consult your county Extension office for advice.

Biological specimen testing

Testing of biological specimens (blood, urine, tissue) is usually done only at the request of professionals such as physicians and veterinarians. They may use the services of private, MDPH or MDA laboratories, depending on the tests required and the circumstances of the situation, or they may perform the tests themselves.

To reiterate, the majority of this biological specimen testing is performed *under recommendations* of a veterinarian or physician and is not directly available. At MSU, however, the Animal Health Diagnostic Laboratory does offer, to the public, consultation and testing services involving animal problems. Questions about biological testing should be directed to the appropriate professional — e.g., physician or veterinarian.



Testing for Contaminants

| Substance to be Tested | Initial Contact |
|---|--|
| Water | Local health department |
| Soil (<i>suitability for septic system</i>) | Local health department |
| Soil (<i>composition or contaminants</i>) | County Cooperative Extension Service office |
| Air (<i>home</i>) | Local health department |
| Air (<i>workplace</i>) | Michigan Department of Public Health (<i>Division of Occupational Health</i>) (517) 335-8250 |
| Air (<i>outdoor</i>) | Michigan Department of Natural Resources (<i>Air Quality Division</i>) (517) 373-7023 |
| Food | Michigan Department of Agriculture (<i>Food Division</i>) (517) 373-1060 or local health department |
| Feed | County Cooperative Extension Service office or Michigan Department of Agriculture (<i>Food Division</i>) (517) 373-1060 or veterinarian |
| Plant/insect/nematode | County Cooperative Extension Service office |
| Biological specimen | Physician or veterinarian or MSU Animal Health Diagnostic Laboratory (517) 353-1683 |

For general information
call the MSU Center for Environmental Toxicology at (517) 353-6469.


Personal Phone Guide

Your county Cooperative Extension Service office _____

Your local health department _____

Your physician _____

Your veterinarian _____



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