



## Myth-busting Homemade Pesticides

*Authored by Stephanie Blevins Wycoff, Extension Associate, Virginia Tech Pesticide Programs; Daniel Frank, Director, Virginia Tech Pesticide Programs; Rachel Parson, Extension Associate, Virginia Tech Pesticide Programs; Kathleen Miller, Extension Associate, Virginia Tech Pesticide Programs; Ashley Appling, ANR Extension Agent, Virginia Cooperative Extension – Culpeper County; Mark Sutphin, ANR Extension Agent, Virginia Cooperative Extension – Frederick County; Edited by Dana Beegle, Publications Manager, Virginia Tech Pesticide Programs*

### Introduction

A great deal of information exists on internet websites and social media platforms that misguide the public about homemade pesticides. The use of homemade pesticides is concerning for several reasons. A key issue is the lack of information that comes with these products. Homemade pesticides do not have directions for use or instructions for safe handling and application. In addition, homemade pesticides are often not effective. Some ingredients can be expensive, and they can harm people, pets, plants, and the environment.

This publication will explain what homemade pesticides are and how they differ from registered pesticides. It will also debunk several common myths about homemade pesticides.

### What Is a Pesticide?

A pesticide is any substance used to prevent, destroy, repel, or manage a pest. Pesticides can be synthetic (man-made) or derived from naturally occurring substances like plants, microorganisms, or inorganic elements. Pesticides are often categorized by the type of pest they control. For example, herbicides control weeds, insecticides control insects, and fungicides control fungi.

A registered pesticide product, like those sold at local retail outlets, are approved by the Environmental Protection Agency (EPA) for distribution and sale across the U.S. When selecting a registered pesticide, it is important to know the identity of the pest you wish to manage and make sure the pest and the intended application site are listed on the product label. Always read the label before you purchase, use, store, or dispose of a pesticide product or its container.

### What Are Homemade Pesticides?

Homemade pesticides consist of common household ingredients mixed together in various combinations and proportions. These mixtures are applied for a variety of pest issues in and around the home. Homemade pesticides often contain ingredients like dish soap, bleach, vinegar, or salt (fig. 1). Unlike registered pesticide products often found at local retail outlets, homemade pesticides are not evaluated and approved by the EPA. They do not have product labels with information based on extensive testing. Without a label, there are no directions for use; no instructions on how to protect humans, animals, and the environment; and no instructions for storage and disposal.



Figure 1. Examples of common household products often found in homemade pesticide recipes.

## Myth: Homemade Pesticides Are Safer Than Registered Pesticides

### Fact: The Safety of Homemade Pesticides Is Unknown

Homemade pesticides are not tested to meet federal regulations or food safety standards, and some uses are considered illegal. Homemade pesticides do not have reliable guidance on use rates, safety procedures, or potential impacts on beneficial organisms and the environment. The ingredients within homemade pesticides may be highly variable and contain additives that are harmful when not used for their intended purpose. In contrast, a product labeled and sold as a pesticide in the U.S. must be registered with the EPA, or meet specific requirements for an official exemption. The registration process involves rigorous testing of the pesticide chemicals to ensure their safety to people and the environment when used as directed (fig. 2).



Figure 2. An example of the instructions you would find on an EPA registered pesticide product label.

Mixing household products to make homemade pesticides can also be dangerous. The labels of some household products advise against combining them with other chemicals. Mixing products can lead to chemical reactions that produce unknown substances such as toxic fumes or materials that can burn skin or eyes. Some home recipes might ask you to extract or further concentrate ingredients. This could

increase toxicity and exposure risks. Always remember that household products are intended for use ONLY as their labels direct. They are NOT intended for creating homemade pesticides such as those found in online recipes.

## Myth: Homemade Pesticides Are More Effective Than Registered Pesticides

### Fact: The Efficacy of Homemade Pesticides Is Often Highly Variable

Since homemade pesticide mixtures have not been formally tested and the ingredients have not been standardized, their effectiveness is often highly variable. Whether they provide adequate short-term or long-term control is seldom known. Some homemade pesticides can actually make a pest problem worse. Their use could injure treated plants or further disperse the pest into untreated areas. Further, some online recipes may instruct you to repeat applications of homemade pesticides to increase control. This practice will increase your time, effort, and inputs, and may fail to adequately control the pest. A registered pesticide product, however, will provide more reliable pest control without the need for constant applications.

## Myth: Homemade Pesticides Are More Economical Than Registered Pesticides

### Fact: Some Ingredients Used in Homemade Pesticides Are Expensive

While some ingredients used in homemade pesticides are inexpensive, others can be costly. Essential oils, for example, are often very pricey. These products are commonly recommended as bug repellents; however, frequent applications are often needed. The amount needed for repeat applications could exceed the cost of a registered repellent. Conversely, registered pesticides (especially ready-to-use products) are often inexpensive compared to the time, energy, and inputs of creating and using homemade pesticides.

## Myth: Homemade Pesticides Are More Environmentally Friendly Than Registered Pesticides

### Fact: The Environmental Impacts of Homemade Pesticides Are Unknown

Some homemade pesticide ingredients like bleach, salt, and vinegar can be very toxic when applied to the environment. Aquatic invertebrates, such as insects who spend some or most of their life cycles in water, are particularly vulnerable to these chemicals. Depending on which ingredients are used and the concentration of the mixture, you may see unintended effects when using homemade pesticides. These effects can include dead patches in your lawn or chemical burns on ornamental plants. Furthermore, little is known about the impact of homemade pesticides on soil microorganisms, pollinators, and other wildlife. In contrast, a registered pesticide will list known environmental hazards when using the product, and how to reduce the risk of environmental damage (fig. 3).

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans and Domestic Animals**  
**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing.  
**Personal Protective Equipment (PPE):** Wear long-sleeved shirt, long pants, socks, and close-toed shoes.

**USER SAFETY RECOMMENDATIONS**  
Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Users should remove clothing and personal protective equipment immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

**Environmental Hazards**  
This pesticide is toxic to aquatic invertebrates. Do not apply directly to water or to areas where surface water is present. To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters, or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area.

Figure 3. An example of the precautionary statements found on EPA registered pesticide product labels that describe how to protect yourself and the environment.

## Conclusion and Resources

Mixing your own pesticides using household products can cause many problems. It can be harmful to you, your plants and pets, and the environment. Use only EPA registered pesticides that are the least toxic available. Be sure the product you choose lists the intended application site and pest on the label. Consult with your local Virginia Cooperative Extension agent or Extension Master Gardener volunteer for advice on pest problems. For further information on homemade pesticides, visit

- Cornell Pesticide Education Fact Sheet: Home Remedies to Control Pests – <https://bpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/b/9225/files/2021/08/Home-Remedies-to-Control-Pests-CCE-PSEP-Fact-Sheet.pdf>
- Are Home Remedies a Good Solution? Penn State Extension Says No! – <https://extension.psu.edu/are-home-remedies-a-good-solution-penn-state-extension-says-no>
- University of Florida Extension: Are Homemade “Pesticides” Legal? – <https://edis.ifas.ufl.edu/publication/PI288>



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