ANTIMICROBIALS
TOPIC FACT SHEET

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What are antimicrobials?

Antimicrobial products kill or slow the spread of microorganisms. Microorganisms include bacteria, viruses, protozoans, and fungi such as mold and mildew.[1] You may find antimicrobial products in your home, workplace, or school.

The U.S. Environmental Protection Agency (EPA) regulates ***antimicrobial products*** as pesticides, and the U.S. Food and Drug Administration (FDA) regulates antimicrobial products as drugs/antiseptics. As pesticides, antimicrobial products are used on objects such as countertops, toys, grocery carts, and hospital equipment. As antiseptics, antimicrobial products are used to treat or prevent diseases on people, pets, and other living things.

If a product shows "EPA" anywhere on the label, you know it's a pesticide and NOT meant for use on the body. This fact sheet will focus on antimicrobials used as pesticides.

If a product label claims to kill, control, repel, mitigate or reduce a pest, it is a pesticide regulated by the U.S. EPA.[2] When manufacturers make this kind of claim on the label, they must also include:

- application instructions that are effective at killing or controlling the pest, and
- first aid instructions, in case of accidental exposure.

Pesticides
Used on surfaces, non-living things
Example: wipes for the kitchen or bathroom
Regulated by the U.S. EPA

Drugs & Antiseptics
Used in or on living things
Example: hand-sanitizing wipes
Regulated by the U.S. FDA

NPIC fact sheets are designed to answer questions that are commonly asked by the general public about pesticides that are regulated by the U.S. Environmental Protection Agency (US EPA). This document is intended to be educational in nature and helpful to consumers for making decisions about pesticide use.

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Bleach is a common name for products that contain sodium hypochlorite. Bleach may be a pesticide, a cleaner, or both.

Bleach as a pesticide

As a pesticide, bleach is used to disinfect surfaces. The label will include specific directions about how to use the product effectively. There will be an EPA registration number on the container.

Bleach as a cleaner

As a general-purpose cleaner or whitening agent, bleach is used on household surfaces and laundry. In this case, it is not acting as a pesticide so it does not require EPA registration.[3,4] Pest-killing instructions will not be included on the label.

What types of antimicrobial pesticides are there?

There are two general categories for antimicrobial pesticides: those that address microbes in public health settings, and those that do not. "Public health products" are designed to handle infectious microbes. See Table 1.

Table 1. Sites of application for antimicrobial pesticides[1]

Non-public health settings	Public health settings
Microbes that may cause objects to spoil or rot	Microbes that may cause people to get sick
• cooling towers	• bathrooms
• fuel	• kitchens
• wood textiles	• homes
• paint	• hospitals
• paper products	• restaurants

There are three types of public health antimicrobials: sterilizers, disinfectants, and sanitizers. See Table 2.

Sanitizers are the weakest public-health antimicrobials. They reduce bacteria on surfaces.[1] Some sanitizers may be used on food-contact surfaces such as countertops, cutting boards, or children's high chairs. The label will indicate how a sanitizer can be used. Some sanitizers can be used only for non-food contact surfaces like toilet bowls and carpets, or air.[5,6]

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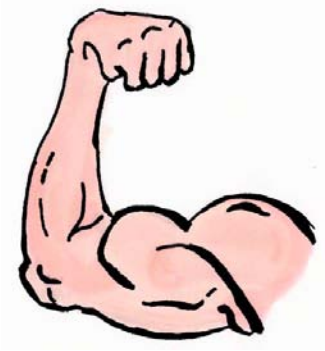
Disinfectants kill or prevent the growth of bacteria and fungi. Some disinfectants target specific viruses.[5,7,8] Disinfectants that kill microbes are called microbicides, but if they only stop microbial growth, without killing the microbe, they are called microbistats.[9] Disinfectants are the preferred public-health antimicrobial for common surfaces in medical settings. Disinfectants are also used in residential settings. Different products purify swimming pools and disinfect household surfaces such as linens, toilets, and bathtubs. Whether disinfectants are used in medical or residentials settings, or elsewhere, they may not be used on surfaces that come in contact with food.

Table 2. Three main types of public health antimicrobial pesticides[a]

	Sanitizer	Disinfectant	Sterilizer
Effective against	99.9% • bacteria	100% • bacteria • fungi • certain viruses	100% • bacteria • fungi • viruses • spores
Time required for effectiveness	30 seconds - 5 minutes	Generally 10 minutes	Variable
Locations / Uses	Household surfaces Food contact surfaces	Household surfaces Medical settings	Medical instruments Research supplies
Effect	Limited microbicide	Microbicide Irreversible microbistat	Microbicide
Formulations	Sprays, liquids, gels, granules, etc.	Sprays, liquids, gels, granules, etc.	Liquids, gases

[a] This table contains generalized information. Always read the product ***label*** to determine where and how a product should be used.[5,7,10,11]



Sterilizers are the strongest type of public health antimicrobial product. In addition to bacteria, algae, and fungi, they also control hard-to-kill spores.[5] Many sterilizers are restricted-use pesticides. These require applicator training and certification. Sterilizers are used in medical and research settings when the presence of microbes must be prevented as much as possible. In addition to chemical sterilizers, high-pressure steam and ovens are also used to sterilize items.[5]

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What do I need to know?

- Always follow the ***label*** directions. The "Directions for Use" are specific, and the product may not work if you don't follow them.
- Never mix different anitmicrobial products.
- Most antimicrobial products take time to work. Read the label to find out how long the product must remain in contact with the surface in order to sanitize, disinfect or sterilize it.[10]
- Dirt, food, slime, and other particles may reduce the effectiveness of antimicrobial products.[10]
- Take steps to reduce your exposure to antimicrobial pesticides. Some products can be harmful when touched or inhaled.

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