



ORGANIC AND  
CONVENTIONAL  
PESTICIDES

# ORGANIC VS CONVENTIONAL

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Organic pesticides are generally considered to be pesticides derived from naturally occurring sources such as minerals, plants, or animals. These chemicals are broken down relatively quickly by weather or soil microbes. Examples of organic pesticides include diatomaceous earth (fossilized water microbes), neem oil (a tree oil extract), or pyrethrins (an extract from chrysanthemums).

The USDA defines synthetic as “a substance that is formulated or manufactured by a chemical process or by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources.” Synthetic pesticides are often referred to as conventional pesticides. Some synthetically produced pesticides meet the criteria for use in organic agriculture. For example, copper sulfate and peracetic acid can be used for plant disease control.

# WHAT IS ORGANIC?



Organic is a labeling term for food or other agricultural products that have been produced according to the USDA organic standards.

Producers and handlers must meet these standards to use the word "organic" or the USDA organic seal on food, feed, or fiber.

# NATIONAL ORGANIC PROGRAM

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The USDA National Organic Program (NOP) organic regulations describe the specific standards that farmers and processors must meet to use the word "organic" or the USDA organic seal on food, feed, or fiber. The NOP accredits and oversees all USDA accredited certifiers.

The NOP also authorizes State Organic Programs, which provides the opportunity for a state to oversee organic production and handling operations within its state.

California is currently the only state in the U.S. with a State Organic Program

The CDFA State Organic Program (SOP) does not provide organic certification. Instead, the California State Organic Program oversees and enforces the USDA organic regulations within California.



# STATE ORGANIC PROGRAM

The SOP protects the integrity of the organic label through enforcement, education, and outreach, and is responsible for enforcing and administering the provisions of state and federal organic laws that govern the standards under which fresh agricultural products/foods may be labeled and/or sold as organic.

Helps facilitate the sale of organic products by supporting the organic industry through outreach and education activities.

Provides organic reports and statistics to local counties.



Provides information to vector control agencies to assist with pest management.

Provides resources on organics in California.



# PESTICIDES

A **pesticide** is a substance that “is intended for preventing, destroying, repelling, or mitigating any pest,” according to U.S. federal law (NPIC, 2018a).

Pesticides include insecticides, herbicides, fungicides, disinfectants, repellents, and biopesticides.

The **toxicity** of a pesticide is its capacity to cause injury to a living system.



Toxicity is determined by a substance’s chemical makeup.

Pesticides may have acute effects over a short period of time, or chronic effects from repeated exposures at lower levels over a longer period of time.



# PESTICIDES

If you make your own mix to apply, that is an unregistered pesticide

For use of any products on public land, you must have a written recommendation written by a Pest Control Adviser



# TYPES OF PESTICIDES

**Conventional pesticides.** Conventional active ingredients are generally produced synthetically, i.e., are synthetic chemicals that prevent, mitigate, destroy, or repel any pest; or that act as a plant growth regulator, desiccant, defoliant or nitrogen stabilizer.

**Biochemicals and microbials (biopesticides).** Biochemical pesticides are naturally occurring substances that control pests by a mechanism other than toxicity—for example, sex pheromones used as mating disrupters for insect pests. A microbial pesticide is one in which the active ingredient is a living pathogen (e.g., bacterium) that infects a pest and then kills or inhibits it. These are very target specific and decompose quickly as compared to conventional pesticides.

**Antimicrobial pesticides.** These are substances or mixtures of substances used to destroy or suppress the growth of harmful microorganisms such as bacteria, viruses or fungi on inanimate objects and surfaces.

**Spray adjuvants.** California law requires registration of adjuvants, which are not considered pesticides under federal law. These are any non-pesticide material used with a pesticide product or pesticide spray mixture to improve the pesticide's performance or the physical properties of the spray mixture.

**Plant growth regulators.** These are substances that accelerate or slow the rate of growth or maturation of a plant, or otherwise alter behavior through physiological action.



# THE NATIONAL LIST OF ALLOWED AND PROHIBITED SUBSTANCES

This list identifies substances that may or may not be used in organic crop production.

1. Synthetic substances are prohibited unless specifically allowed.
2. Non-synthetic substances are allowed unless specifically prohibited.
3. Genetically modified organisms are prohibited.

# THE NATIONAL LIST OF ALLOWED SUBSTANCES

Biological  
Pesticides: Living  
microbes

Botanical  
Pesticides:  
Derived from  
plants

Spray Oils:  
Vegetable or  
animal derived  
oils

Insecticidal  
Soaps

Minerals

Pheromones

# SYNTHETIC SUBSTANCES ALLOWED FOR USE IN ORGANIC CROP PRODUCTION

- As algicide, disinfectants and sanitizers including irrigation system cleaning systems :
  1. Alcohol products like ethanol and isopropanol: Used as algicide, disinfectants and sanitizers
  2. Chlorine materials: Calcium hypochlorite, chlorine dioxide, sodium hypochlorite, potassium hypochlorite, hypochlorous acid
  3. Copper Sulfate: Aquatic rice systems
  4. Hydrogen peroxide
  5. Ozone gas

# SYNTHETIC SUBSTANCES ALLOWED FOR USE IN ORGANIC CROP PRODUCTION

- As herbicides, weed barriers, as applicable:
  1. Soap based herbicides: used in farmstead maintenance (roadways, ditches, right of ways, building parameters) and ornamental crops
  2. Mulches
- As animal repellents-soaps, ammonium
- As insecticides like ammonium carbonate, boric acid, lime sulfur
- As plant or soil amendments, plant growth regulators, plant disease control
- As insect management (Pheromones), as rodenticides: Vitamin D3

# NON SYNTHETIC SUBSTANCES PROHIBITED FOR USE IN ORGANIC CROP PRODUCTION

- (a) Ash from manure burning.
- (b) Arsenic.
- (c) Calcium chloride, brine process is natural and prohibited for use except as a foliar spray to treat a physiological disorder associated with calcium uptake.
- (d) Lead salts.
- (e) Potassium chloride—unless derived from a mined source and applied in a manner that minimizes chloride accumulation in the soil.
- (f) Rotenone (CAS # 83-79-4).
- (g) Sodium fluoaluminate (mined).
- (h) Sodium nitrate—unless use is restricted to no more than 20% of the crop's total nitrogen requirement; use in spirulina production is unrestricted until October 21, 2005.
- (i) Strychnine.
- (j) Tobacco dust (nicotine sulfate)

# HOW TO DETERMINE IF THE PRODUCT IS ALLOWED FOR ORGANIC AGRICULTURE?

- Use the OMRI list: The Organic Materials Review Institute (OMRI) is an international nonprofit organization that determines which products are permitted for use in organic production. The USDA NOP allows OMRI Listed Products for use in certified organic operations. The OMRI Products list is a complete directory of permitted products for organic production and processing. It is available to the public on the OMRI website, and it includes over 5,500 products



# HOW TO DETERMINE IF THE PRODUCT IS ALLOWED FOR ORGANIC AGRICULTURE?

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- Use the WSDA brand name materials list: The Brand Name Material List (BNML) is maintained by the WSDA Organic Food Program and can be accessed on its website. There are three versions: Sorted by Product, Sorted by Company, and Sorted by Type.





## WHAT IS A MINIMUM RISK PESTICIDE?

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Because EPA has determined that certain "minimum risk pesticides" pose little to no risk to human health or the environment, EPA has exempted them from the requirement that they be registered under the Federal Insecticide, Fungicide, and Rodenticide Act



# WHAT IS FIFRA?

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is a federal law in the United States. It was created to ensure the safety of pesticide applicators, consumers, and the environment.

Before a pesticide may be sold or distributed in the United States, it must be registered with the EPA.



# WHAT DOES BEING FIFRA 25 (B) EXEMPT MEAN?

- Before a pesticide can be registered under FIFRA, Applicants must show that using the pesticide will not cause undue environmental harm
- Once federal registration is complete under FIFRA, the product is strictly regulated regarding what crops you can apply on, application rate, method, timing, and many other aspects
- However, some products are exempt from FIFRA requirements for pesticide regulation. The EPA came up with a list of ingredients that do not have to be registered.

# WHAT DOES BEING FIFRA 25 (B) EXEMPT MEAN?

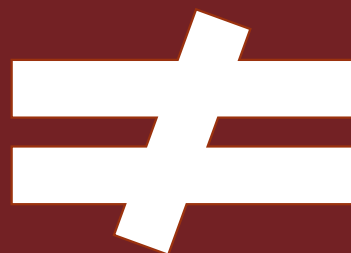
- These are ingredients that are safe for crops, growers, and the environment. This provides a considerable advantage to the applicator with minimum risk.
- FIFRA 25(b) exempt products are allowed for use on a broad range of crops.
- They can be used without restrictions on application timing or volume like many EPA-registered products.

# EXEMPT PRODUCTS – FIFRA 25(B)

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- Generally Reduced risk pesticides
- Materials exempt from EPA Registration –  
*Active Ingredient*  
*Inert Ingredients*
- Pesticide use reporting not required
- Must keep application records
- Still must train employees and fieldworkers
- All listed active ingredients may be used in non-food use products
- Food and animal feed in commerce can bear pesticide residues only for those ingredients that have tolerances established





Exempt products from  
Federal Insecticide Fungicide and Rodenticide Act (FIFRA)  
- No EPA number –  
are generally Minimal Risk Pesticides

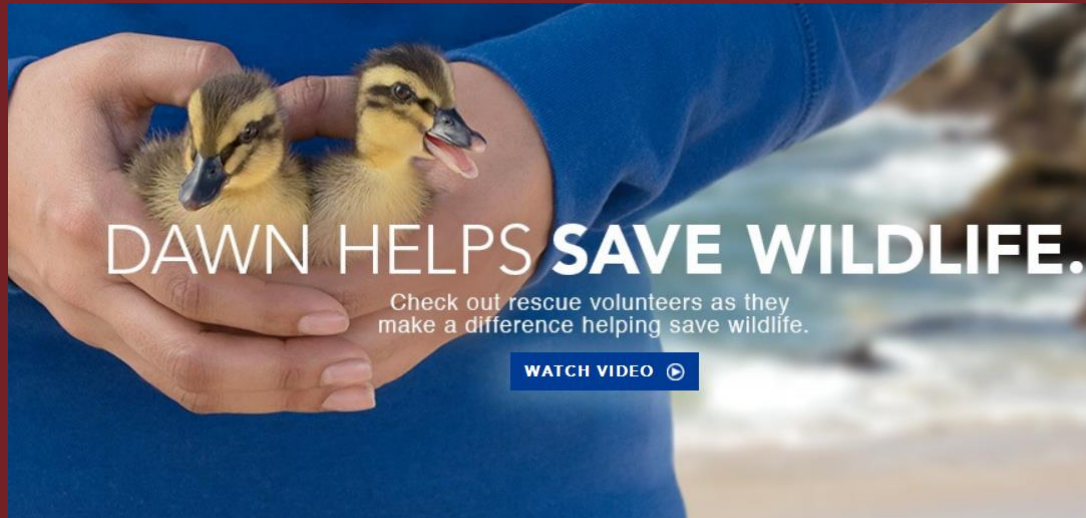
TABLE 1—ACTIVE INGREDIENTS PERMITTED IN EXEMPTED MINIMUM RISK PESTICIDE PRODUCTS

Label Display Name	Chemical Name	CAS No.	Specifications	Nonfood Use	Food Use
Castor oil	Castor oil	8001-79-4	United States Pharmacopeia (U.S.P.) or equivalent	✓	✓
Cedarwood oil	Cedarwood oil (China)	85085-29-6	---	✓	
Cedarwood oil	Cedarwood oil (Texas)	68990-83-0	---	✓	
Cedarwood oil	Cedarwood oil (Virginia)	8000-27-9	---	✓	
Cinnamon	Cinnamon	N/A	---	✓	✓
Cinnamon oil	Cinnamon oil	8015-91-6	---	✓	✓
Citric acid	2-Hydroxypropane-1,2,3-tricarboxylic acid	77-92-9	---	✓	✓
Citronella	Citronella	N/A	---	✓	
Citronella oil	Citronella oil	8000-29-1	---	✓	
Cloves	Cloves	N/A	---	✓	✓
Clove oil	Clove oil	8000-34-8	---	✓	✓

TABLE 1—ACTIVE INGREDIENTS PERMITTED IN EXEMPTED MINIMUM RISK PESTICIDE PRODUCTS

Label Display Name	Chemical Name	CAS No.	Specifications	Nonfood Use	Food Use
Corn gluten meal	Corn gluten meal	66071-96-3	---	✓	✓
Corn oil	Corn oil	8001-30-7	---	✓	✓
Cornmint	Cornmint	N/A	---	✓	✓
Cornmint oil	Cornmint oil	68917-18-0	---	✓	✓
Cottonseed oil	Cottonseed oil	8001-29-4	---	✓	✓
Dried blood	Dried blood	68911-49-9	---	✓	
Eugenol	4-Allyl-2-methoxyphenol	97-53-0	---	✓	
Garlic	Garlic	N/A	---	✓	✓
Garlic oil	Garlic oil	8000-78-0	---	✓	✓
Geraniol	(2E)-3,7-Dimethylocta-2,6-dien-1-ol	106-24-1	---	✓	✓
Geranium oil	Geranium oil	8000-46-2	---	✓	
Lauryl sulfate	Lauryl sulfate	151-41-7	---	✓	✓
Lemongrass oil	Lemongrass oil	8007-02-1	---	✓	
Linseed oil	Linseed oil	8001-26-1	---	✓	✓
Malic acid	2-Hydroxybutanedioic acid	6915-15-7	---	✓	
Peppermint	Peppermint	N/A	---	✓	✓
Peppermint oil	Peppermint oil	8006-90-4	---	✓	✓
2-Phenylethyl propionate	2-Phenylethyl propionate	122-70-3	---	✓	
Potassium sorbate	Potassium (2E,4E)-hexa-2,4-dienoate	24634-61-5	---	✓	✓
Putrescent whole egg solids	Putrescent whole egg solids	51609-52-0	---	✓	✓
Rosemary	Rosemary	N/A	---	✓	✓
Rosemary oil	Rosemary oil	8000-25-7	---	✓	✓
Sesame	Sesame	N/A	Includes ground sesame plant	✓	✓
Sesame oil	Sesame oil	8008-74-0	---	✓	✓
Sodium chloride	Sodium chloride	7647-14-5	---	✓	✓
Sodium lauryl sulfate	Sulfuric acid monododecyl ester, sodium salt	151-21-3	---	✓	✓
Soybean oil	Soybean oil	8001-22-7	---	✓	✓
Spearmint	Spearmint	N/A	---	✓	✓
Spearmint oil	Spearmint oil	8008-79-5	---	✓	✓
Thyme	Thyme	N/A	---	✓	✓
Thyme oil	Thyme oil	8007-46-3	---	✓	✓
White pepper	White pepper	N/A	---	✓	✓
Zinc	Zinc	7440-66-6	Zinc metal strips (consisting solely of zinc metal and impurities)	✓	

# INERT INGREDIENTS NOT PERMITTED IN MINIMUM RISK PESTICIDE PRODUCTS



Components	CAS #	Percent
ALCOHOL SULFATES, SODIUM SALT	68585-47-7	7-13
ALCOHOL ETHOXYSULFATE, SODIUM SALT	68585-34-2	5-10
AMINES, C10-16-ALKYLDIMETHYL, N-OXIDES	70592-80-2	1-5
ETHANOL	64-17-5	1-5



# INERT INGREDIENTS PERMITTED IN MINIMUM RISK PESTICIDE PRODUCTS

COMMONLY CONSUMED FOOD COMMODITIES

ANIMAL FEED ITEMS

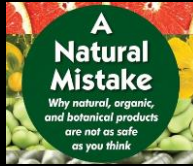
EDIBLE FATS AND OILS

SPECIFIC CHEMICAL SUBSTANCES

# ORIGIN DOES NOT DICTATE TOXICITY



The Environmental Protection Agency uses signal words to indicate how acutely toxic a pesticide is to humans through different exposure routes (oral, dermal [skin], inhalation, and eye).



While organic pesticides are typically viewed as safer alternatives to synthetic pesticides, this is not always the case.



Always report the use of both conventional and organic pesticides



Follow all label directions to protect yourself and the environment. Label is the law!

# ORIGIN DOES NOT DICTATE TOXICITY



Some organic pesticides carry the highest toxicity signal word, DANGER. For example, lime-sulfur solution, an effective fungicide, carries the DANGER signal word. This organic pesticide should be used with extreme caution.




Conversely, simply because a pesticide is synthetic does not mean it is highly toxic. For example, the fungicide Armada 50 WDG, carries a CAUTION label on the product.



The point to remember is that organic does not mean "safe," just as synthetic does not mean "dangerous." Read the label to determine the hazards of each product you use.

# ORGANIC PRODUCTS LABELS



## LIME-SULFUR

Not for residential use or application to residential sites. This product may not be used in, on, or around any structure, vehicle, article, surface or area associated with the household, including non-agricultural outbuildings, non-commercial greenhouses, pleasure boats and recreational vehicles; in or around any preschool or day care facility or on humans or pets.

<b>ACTIVE INGREDIENTS:</b>	<b>By Wt.</b>
Calcium Polysulfide	23.0%
<b>OTHER INGREDIENTS:</b>	71.0%
<b>TOTAL</b>	100.0%

**DENSITY:**

Baume at 60°F	31*
Lbs. Per Gallon at 68°F	10.6

Contains Calcium and Sulfur expressed as Gypsum – 3.0 lbs. per gallon. Other combined Sulfur – 1.9 lbs. per gallon.

EPA Reg. No. 61842-30-90930  
EPA Est. No. 48498-CA-1  
4-NY-1

**NET CONTENTS: GALLONS**

Distributed by:  
**MILLER CHEMICAL & FERTILIZER, LLC**  
P.O. Box 333  
11/2016 Hanover, Pennsylvania 17331

<b>HOT LINE NUMBER:</b>	<ul style="list-style-type: none"> <li>Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-866-374-1975 for emergency medical treatment information.</li> </ul>
<b>NOTE TO PHYSICIAN</b>	<ul style="list-style-type: none"> <li>Probable mucosal damage may contraindicate gastric lavage.</li> </ul>

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- shoes plus socks
- waterproof gloves
- protective eyewear

Mixers/loaders and applicators must wear a NIOSH-approved particulate respirator with any R or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

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Follow the manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### ENGINEERING CONTROLS

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.607(d), (e), and (f)), the handler PPE requirements may be reduced or modified as specified in the WPS.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water) is:

- Coveralls
- Shoes plus socks
- Waterproof gloves
- Protective eyewear

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this label apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. Keep unprotected persons out of treated areas until sprays have dried.

PRODUCTION



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CALIFORNIA

# SUMMARY

Organic products may still have Danger signal words and have health hazards.



Use of any product with an EPA number must be reported



Exempt products are not same as qualifying for organic



Use the USDA NOP approved OMRI and BNML lists

QUESTIONS??



THANK YOU

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Avneet Kakkar

akakkar@smcgov.org

(650) 363-4700

smateoag@co.sanmateo.ca.us

<https://agwm.smcgov.org/>

**COUNTY** OF **SAN MATEO**

