

Organic Pesticide is NOT an Oxymoron

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Do organic growers use pesticides?

- Over 25% of OMRI listed products are pest management products*
- 312 are registered by EPA as pesticides*
- 188 are registered as pesticides in Maine*
- 139 of the pesticide products are not registered by EPA and should not be used to control pests in the US*



*2009 Data gathered by Lebelle Hicks and Gary Fish Maine BPC

PDP also detects pesticide residues on organic produce

- According to the 2008 USDA Pesticide Data Program Report:
 - 43% of organic spinach samples were positive for spinosad (13 of 30 samples positive)
- According to the 2010 and 2011 USDA Pesticide Data Program Report:
 - 52% of organic baby food pear samples were positive for spinosad (16 of 31 samples) 2010
 - 49% of organic baby food pear samples were positive for spinosad (33 of 67 samples) 2011
- Spinosad is National Organic Program approved and is derived from a naturally occurring soil bacteria



No endorsement intended or implied

What is a pesticide?

- Any substance or mixture of substances intended for:

- preventing,
- destroying,
- repelling, or
- mitigating any pest



No endorsement intended or implied

- Or, any plant regulator, defoliant or desiccant.
- Does not include fertilizers or nutrients

These are pesticides?

- Disinfectants & bleaches



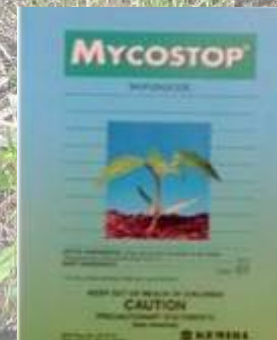
- Herbicides



- Rat & mouse baits



- Fungicides



No endorsement intended or implied

These are pesticides?

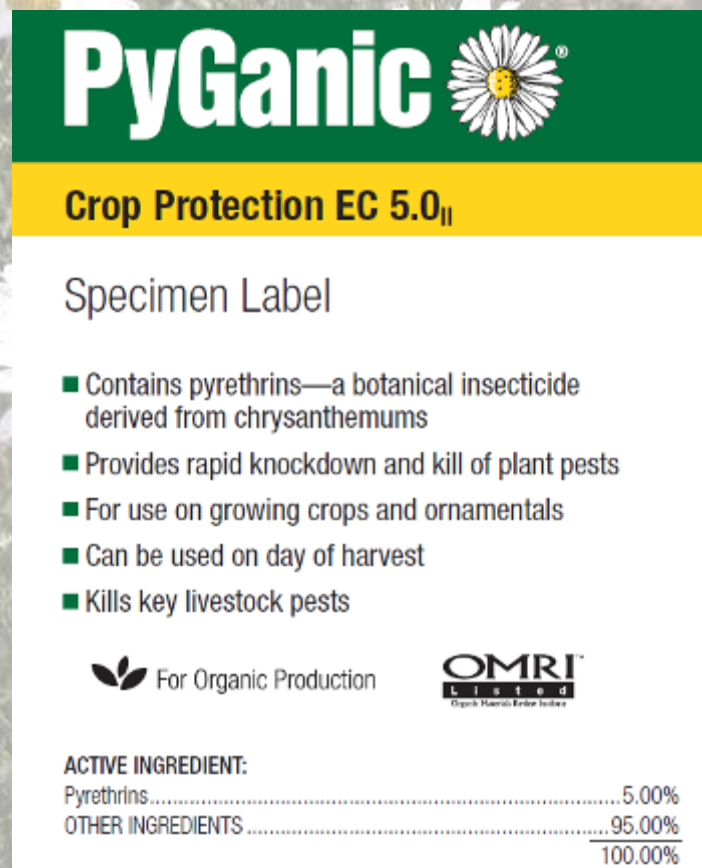
- Insecticides
- Botanicals
- Biological controls
- Deer and rabbit repellents




No endorsement intended or implied

Are botanical pesticides risky?

- **Pyrethrin has a changing cancer rating –**
 - EPA now ranks it as a “not likely to be a human carcinogen” unless exposure is at doses that cause increased cell division in the liver
- **It has also been shown to be a thyroid hormone disruptor**
- **Residues are detected in organic and conventional foods at low levels**





PyGanic 

Crop Protection EC 5.0_{II}

Specimen Label

- Contains pyrethrins—a botanical insecticide derived from chrysanthemums
- Provides rapid knockdown and kill of plant pests
- For use on growing crops and ornamentals
- Can be used on day of harvest
- Kills key livestock pests

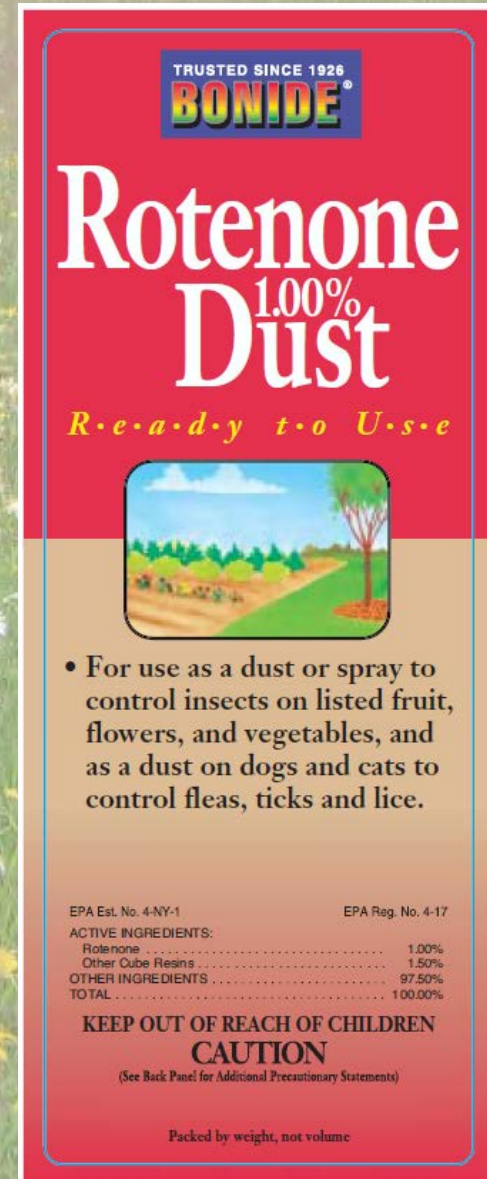
 For Organic Production 

ACTIVE INGREDIENT:
Pyrethrins 5.00%
OTHER INGREDIENTS 95.00%
100.00%

No endorsement intended or implied

Are botanical pesticides risky?

- Old standby botanical insecticide
- In 2006 the manufacturers/distributors voluntarily canceled the registration
- Why? In 2004 EPA required an inhalation neuro-toxicity study.
 - Induces Parkinson's Disease-like symptoms
 - Induces liver cells to self-destruct
 - Dust products are of particular concern for inhalation exposure.
 - Because of fetal sensitivity EPA required a 10X reduction in exposure potential
- 2011 Ag Health Study also shows Parkinson's connection.



Are “organic” fungicides risky?

- Copper is an element, so it does not degrade in the soil
- Since 2006 the EU has severely restricted use of copper fungicides (5.4 lbs/Ac/Yr) and Holland and Denmark have banned them
- On average organic crops contain 10% more copper than conventional crops
- Copper is toxic to plants, particularly in large doses and at high temperatures.
- Copper will be more toxic to plants in acidic conditions and more effective against disease under higher pH conditions



No endorsement intended or implied

Battling blight the organic way



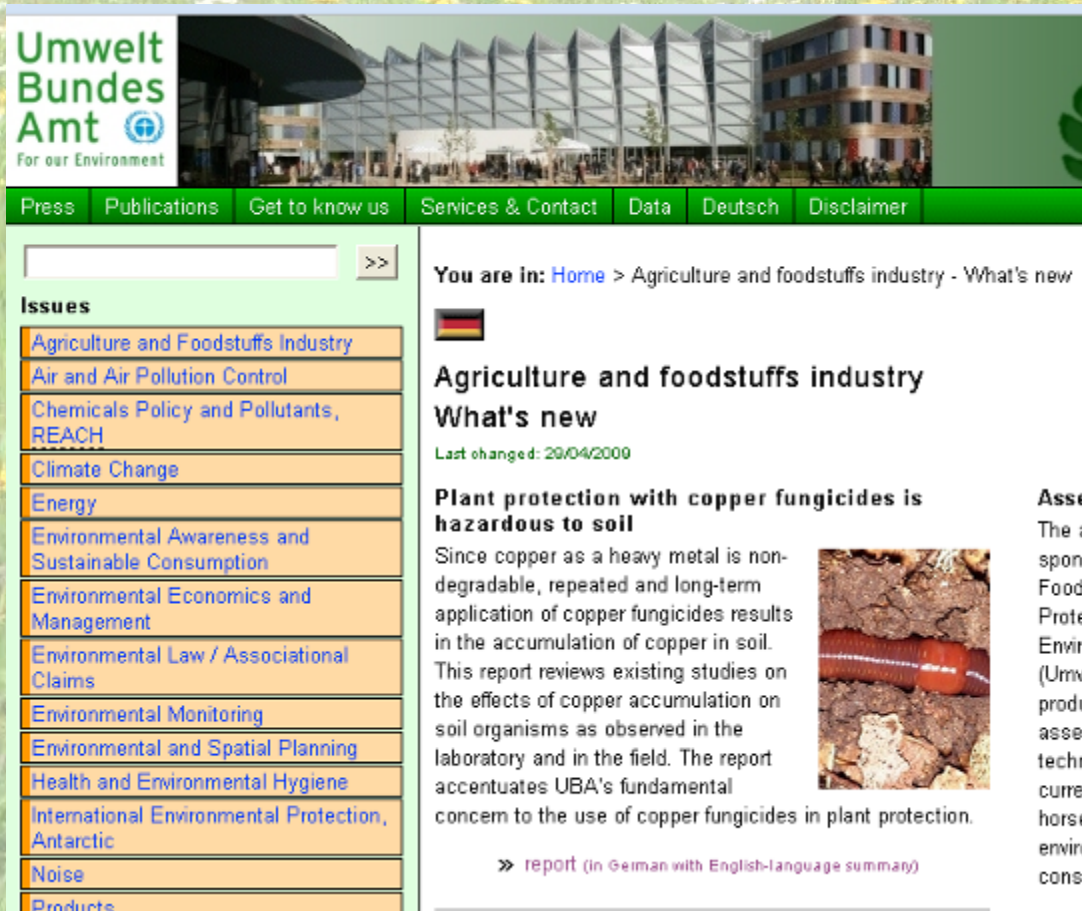
An example of the blight-free potatoes

Potato late blight is a serious disease in both conventional and organic agriculture, causing drastic crop loss as the Irish potato famine of 1845 most graphically demonstrated. Organic production of potatoes has long relied on copper based fungicides to control blight, but the negative impact of the accumulation of copper in perennial crops (e.g. grapevine and top fruit) led, in March

2002, to a ban on their use in organic agriculture across Europe. Organic potato producers must learn to control blight without copper while maintaining the yields required to remain competitive. A Europe-wide project, funded via the European Commission's Key Action Five programme, is underway that seeks to develop new strategies for the long-term control of potato blight in organic agriculture.

Are “organic” fungicides risky?

- Soil accumulation is especially pronounced in perennial crops



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Agriculture and foodstuffs industry

What's new

Last changed: 29/04/2009

Plant protection with copper fungicides is hazardous to soil

Since copper as a heavy metal is non-degradable, repeated and long-term application of copper fungicides results in the accumulation of copper in soil. This report reviews existing studies on the effects of copper accumulation on soil organisms as observed in the laboratory and in the field. The report accentuates UBA's fundamental concern to the use of copper fungicides in plant protection.



>> [report](#) (in German with English-language summary)



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Recent research shows the environmental hazards of copper fungicides

- Copper concentrations are higher in many agricultural soils
- In the lab copper significantly harms soil organisms (especially earthworms)
- Field results for soils over 50 ppm of copper have clear effects on earthworms
- 20 – 36% of copper fungicides can run off from plastic mulch and harm aquatic life



Environmental Fate and Ecological Impact of Copper Hydroxide: Use of Management Practices to Reduce the Transport of Copper Hydroxide in Runoff from Vegetable Production

Pamela J. Rice¹, Jennifer A. Harman-Fetcho², Lynne P. Heighton², Laura L. McConnell², Ali M. Sadeghi², and Cathleen J. Hapeman²

¹Agricultural Research Service, U.S. Department of Agriculture, St. Paul, MN 55108;

²Agricultural Research Service, U.S. Department of Agriculture, Beltsville, MD 20705

Vegetable production practices combining copper-based pesticides with polyethylene mulch create conditions for highly toxic runoff emissions to surface waters. Copper hydroxide is a widely used fungicide-bactericide approved for both organic and conventional agricultural production of vegetable crops for control of diseases. Copper-based pesticides are often viewed as more “natural” than synthetic organic pesticides, but aquatic biota, such as the saltwater bivalve *Mercenaria mercenaria*, are extremely sensitive to low concentrations of copper. The use of polyethylene mulch in organic and traditional vegetable production is gaining popularity because it decreases pesticide use and warms the soil allowing for earlier crop planting, but its use also increases runoff volume and soil erosion. Two field studies were conducted to evaluate the effectiveness of management practices to reduce loads of copper in runoff from tomato production. Seasonal runoff losses of 20 to 36% of applied copper hydroxide were observed in tomato plots using plastic mulch with bare soil furrows. The addition of vegetative furrows between the raised, polyethylene-covered beds or the replacement of polyethylene mulch with vegetative residue

Essential oil pesticides

- **Some pesticides have been deregulated by EPA**

- **FIFRA 25(b) Exempt**
- **Exempt from Federal registration**
- **Exempt from toxicity testing**
- **Some are OMRI listed**



No endorsement intended or implied
Ingredients in these products

- **Rosemary oil**
- **Peppermint oil**
- **Thyme oil**
- **Clove oil**
- **Wintergreen oil**
- **Cinnamon oil**

What do we know about essential oil pesticide risks?

- Not enough since they are exempt from toxicity tests
- Rosemary oil – not well tested
- Peppermint oil –
 - sensitization,
 - irritant,
 - lung damage,
 - not recommended for children, infants or during pregnancy or breast feeding
- Clove oil –
 - allergic reactions,
 - not good for people with liver or kidney disorders,
 - increases bleeding risks,
 - interacts with drugs,
 - contains eugenol which when methylated becomes a potent carcinogen



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EcoSMART[®] ORGANIC[™]

GARDEN INSECT KILLER 

Introducing **EcoSMART[®] ORGANIC[™] Garden Insect Killer**.
Now there is an organic insecticide that is **safe to use around children and pets and won't harm the environment**. **EcoSMART[®] ORGANIC[™] Garden Insect Killer** is made from a patented blend of organic plant oils. It kills bugs fast, without any synthetic toxins or harmful residue. It's safe. It's effective. It's smart. Naturally.

To learn more about **EcoSMART[®]** and its entire portfolio of organic pesticide products, please visit our web site at www.ecosmart.com.

Register to win free EcoSMART product at ecosmart.com/garden

FRESH NATURAL SCENT SIGNALS IT'S WORKING.

KILLS AND REPELS: Many common garden pests including Aphids, Mites, Thrips, Whiteflies, Beetles and Caterpillars.

WHERE TO USE: Use on Fruits, Vegetables, Flowers, Ornamentals, Trees & Shrubs.

SHAKE WELL BEFORE USING. READ ENTIRE LABEL AND USE ACCORDINGLY.

Active Ingredients:

Rosemary Oil	0.25%
Peppermint Oil	0.25%
Thyme Oil	0.25%
Clove Oil	0.25%
Other Ingredients*	99.00%
Total	100.00%

*Water, Mineral Oil (USP), 9-Octadecenoic acid (9Z)-, potassium salt, Lecithin

Questions or Comments? Call **1-877-723-3545**

 **EcoSMART[®] Technologies**
Manufactured for:
EcoSMART TECHNOLOGIES, INC.
3600 Mansell Road, Suite 150
Alpharetta, GA 30022

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No endorsement intended or implied

What are the risks?

- Wintergreen oil –
 - highly toxic,
 - not recommended during pregnancy,
 - causes dermatitis,
 - inhalation hazard
- Cinnamon oil –
 - powerful irritant and
 - even worse sensitizer



Introducing EcoSMART FLYING INSECT KILLER

Now there is a new, organic, fast-killing insecticide that is **safe to use around children and pets**. Unlike other insecticides, it is made from organic plant oils and kills bugs naturally to better protect your family. Plus, there's no pesticide residue. It's safe. It's effective. It's smart. Naturally.

To learn more about the EcoSMART story, as well as our products and technology, please visit us at www.ecosmart.com.

FRESH NATURAL SCENT SIGNALS IT'S WORKING.

DIRECTIONS FOR USE:

SHAKE WELL BEFORE USING. READ ENTIRE LABEL AND USE ACCORDINGLY.

FLYING INSECT TREATMENT: Kills flies, gnats, mosquitoes, moths, wasps and other flying insect pests on contact. Hold container upright and aim nozzle away from person. Press button firmly to spray. Direct spray at flying insects, contacting as many insects as possible. Spray in short 2-3 second bursts.

NOTE: When used indoors, wipe away excess product.

PRECAUTIONARY STATEMENTS: We recommend good safety practices when using any insecticide, such as avoiding contact with eyes and skin. If product gets in eyes, flush with water for at least 15 minutes. If on skin, wash with soap and water. If irritation persists, contact a physician.

PHYSICAL HAZARDS: Contents under pressure. Keep away from heat, sparks and open flames. Do not puncture or incinerate container. Exposure to temperatures above 130° Fahrenheit may cause container to burst.

STORAGE & DISPOSAL: CAUTION: Keep out of reach of children. Store in a cool, dry area away from heat or open flames. When container is empty, recycle if available. Do not puncture or incinerate.

LIMITATION OF LIABILITY: EcoSMART makes no warranties of merchantability or of fitness for a particular purpose, nor any other express or implied warranty except as stated above. Buyer assumes all responsibility for safety and use not in accordance with label, directions and precautionary statements.

EcoSMART represents that this product is a Minimum-Risk pest control product, and qualifies for exemption from EPA registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Active Ingredients: Organic Plant Oils

Peppermint Oil	2.00%
Cinnamon Oil	1.00%
Sesame Oil	1.00%
Other Ingredients*	96.00%
Total	100.00%

*Water, Wintergreen Oil, Isopropanol, Canola Oil, Lecithin, Carbon Dioxide

EcoSMART®



Questions or Comments? Call 1-877-723-3545
24 hours a day, 7 days a week



Manufactured for
EcoSMART TECHNOLOGIES, INC.
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No endorsement intended or implied

All pesticides have risks!!!

■ Organic ≠ Safe



■ Synthetic ≠ Highly toxic



■ Natural ≠ Safe



No endorsement intended or implied

Even organic products are toxic!

SCIENTIFIC AMERICAN™

Are lower pesticide residues a good reason to buy organic? Probably not.

By Christie Wilcox | September 24, 2012 | 37

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A lot of organic supporters are up in arms about the recent Stanford study that found no nutritional benefit to organic foods. Stanford missed the point, they say—it's not about what organic foods have in them, it's what they don't. After all, avoidance of pesticide residues is the #1 reason why people buy organic foods.



Yes, conventional foods have more synthetic pesticide residues than organic ones, on average. And yes, pesticides are dangerous chemicals. But does the science support paying significantly more for organic foods just to avoid synthetic pesticides? No.

A Pesticide Is A Pesticide

I'm not saying that pesticides, herbicides, and insect repellants aren't toxic. I certainly wouldn't recommend drinking cocktails laced with insect-repelling chemicals, for without a doubt, they can be bad for you. Pesticide exposure has been linked to all kinds of diseases and conditions, from neurodegenerative diseases like Parkinson's to cancer. What we do know, though, is that natural isn't synonymous with harmless. As a 2003 review of food safety concluded, "what should be made clear to consumers is that 'organic' does not equal 'safe'."

I've said it before and I'll say it again: there is nothing safe about the chemicals used in organic agriculture. Period. This shouldn't be that shocking – after all, a pesticide is a pesticide. "Virtually all chemicals can be shown to be dangerous at high doses," explain scientists, "and this includes the thousands of natural chemicals that are

Even organic products are toxic!

TABLE 2-12 Original chart from Pests of the Garden and Small Farm by Mary Louise Flint Amended by Gary Fish September 2007

Oral LD₅₀ Values for Some Pesticides Used in Small Farms and Gardens.

CHEMICAL	COMMON TRADE NAMES	ORAL LD ₅₀ ^a	EIC ^b	TYPE OF PESTICIDE
Nicotine	Black Leaf 40	55	45 ¹	insecticide
Rotenone*		132	33	insecticide
Bordeaux*		300	68	fungicide
Diazinon		300	43	insecticide
2,4-D		375	17	herbicide
Carbaryl	Sevin	500	21	insecticide
Acephate	Orthene	866	23	insecticide
Copper hydroxide*	Kocide	1000	33	fungicide
Copper oxychloride sulfate*	C-O-C-S	1000	33 ¹	fungicide
Ryania*		1200	55	insecticide
Malathion		1375	24	insecticide
Pyrethrum*		1500	18	insecticide
Propargite	Omite	2200	43	acaricide
Sabadilla*		4000	36	insecticide
Glyphosate	Round-up	4300	15	herbicide
Cryolite*	Kryocide	10,000	21	insecticide
Benomyl	Benlate	>10,000	53	fungicide
<i>Bacillus thuringiensis</i> *	Dipel	15,000	8	insecticide

NOTE: Some materials on this list may not be currently registered as pesticides or their use may be restricted.

*asterisk indicates chemical was acceptable for organically grown produce.

^aLD₅₀ indicates the amount of pesticide that will kill half of a group of test animals. These values are for milligrams of pesticide per kilogram of body weight. These figures do not provide an indication of the chronic health risk or persistence in the environment.

^bEIC or Environmental Impact Quotient is a method to calculate the environmental impact of most common fruit and vegetable pesticides (insecticides, acaricides, fungicides and herbicides) used in commercial agriculture. The values obtained from these calculations can be used to compare different pesticides and pest management programs to ultimately determine which program or pesticide is likely to have the lower environmental impact.

¹Estimated EIO.

“All substances are poisons; there is none which is not a poison. The right DOSE differentiates a poison from a remedy.”

—Paracelsus (1493-1541)

Even too much water can kill – over 1.5 liters/hour



Woman dies after water-drinking contest Water intoxication eyed in 'Hold Your Wee for a Wii' contest death

AP Associated Press
Updated: 10:24 p.m. ET Jan 13, 2007

SACRAMENTO, Calif. - A woman who competed in a radio station's contest to see how much water she could drink without going to the bathroom died of water intoxication, the coroner's office said Saturday.

Jennifer Strange, 28, was found dead Friday in her suburban Rancho Cordova home hours after taking part in the "Hold Your Wee for a Wii" contest in which KDND 107.9 promised a Nintendo Wii video game system for the winner.

"She said to one of our supervisors that she was on her way home and her head was hurting her real bad," said Laura Rios, one of Strange's co-workers at Radiological Associates of Sacramento. "She was crying and that was the last that anyone had heard from her."

NBC VIDEO



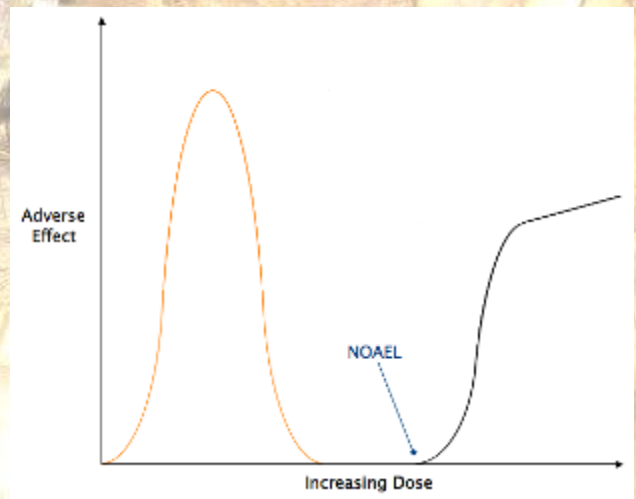
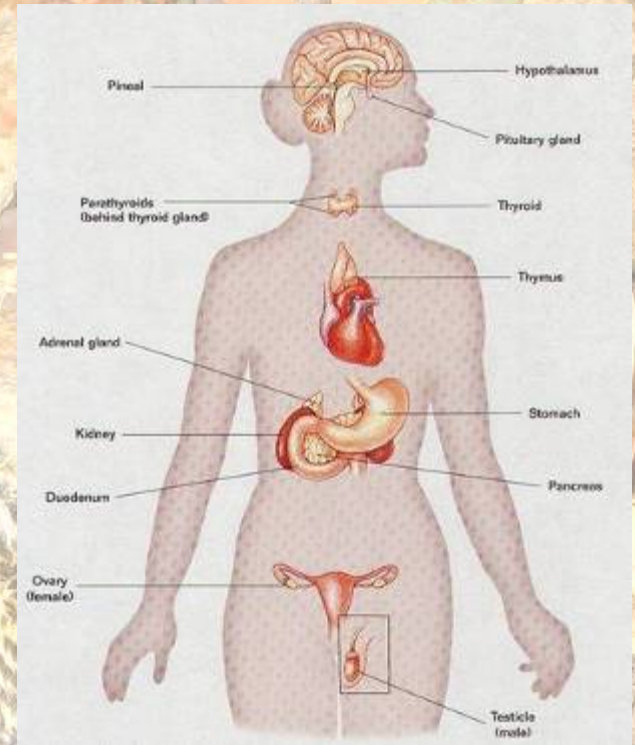
Launch

Woman in water drinking contest dies
Jan. 15: Sacramento Bee reporter Christina Jewett talks to MSNBC-TV's Confessa Brewer about the death of a woman who had competed in a radio station contest.

MSNBC

Endocrine effects

- EPA is just beginning to do endocrine disrupter screening for pesticide active and inert ingredients
- <http://www.epa.gov/scipoly/oscpendo/index.htm>
- http://www.epa.gov/scipoly/oscpendo/pubs/final_list_frn_041509.pdf
- Does the dose make the poison?? What about hormesis?
- <http://www.belleonline.com/index.htm>



So what is an organic gardener to do about pests?

- **Think first... Spray last!**
- **Practice Integrated Pest Management (IPM)**
- **Identify the pest specifically**
 - www.gotpests.org
- **Only use pesticides (organic or not) as a last resort**
- **Choose the least toxic and most specific pesticide available**
- **Consider the number of applications required when choosing controls**
- **Use all pesticides with great caution and respect**

Spare all sprays, even organic, to protect beneficial insects



- Dragonflies
- Spiders
- Small parasitic wasps
- Predatory mites
- Syrphid flies
- Ground beetles



The key to proper use

- Read and follow the label & SDS
- Do your homework
- If you are a commercial grower
 - only use products approved for agricultural use
 - do not use products designed for home garden or home owner use

Specimen Label

Dow AgroSciences

Entrust[®]

SC

Naturalyte[®] Insect Control

*Trademark of Dow AgroSciences LLC

A Naturalyte[®] insect control product formulated for control of lepidopterous larvae (worms or caterpillars), leafminers, thrips, and red imported fire ants.

Group	5	INSECTICIDE
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Active Ingredient:
spinosad (a mixture of spinosyn A and spinosyn D)..... 22.5%
Other Ingredients..... 77.5%
Total..... 100.0%

Contains 2 lb of active ingredient per gallon.

OMRI
Listed

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

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
- Chemical-resistant gloves made of any waterproof material
- Shoes plus socks

COLORADO POTATO BEETLE BEATER CONCENTRATE

• DO-IT-YOURSELF HOME GARDEN INSECT CONTROL.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

For residential use in home gardens, lawns and ornamentals. Not for use on plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.

No endorsement intended or implied

The key to proper use

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 Dow AgroSciences



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Resources

- <http://www.nlm.nih.gov/medlineplus/>
- <http://www.pesticideinfo.org/>
- http://www.epa.gov/pesticides/biopesticides/regtools/25b_list.htm
- <http://www.omri.org>
- <http://www.ams.usda.gov/AMSV1.0>
- <http://www.ncbi.nlm.nih.gov/pubmed/16403682>
- <http://spot.colorado.edu/~carpenh/Magkos.pdf>
- <http://blogs.scientificamerican.com/science-sushi/2012/09/24/pesticides-food-fears/>