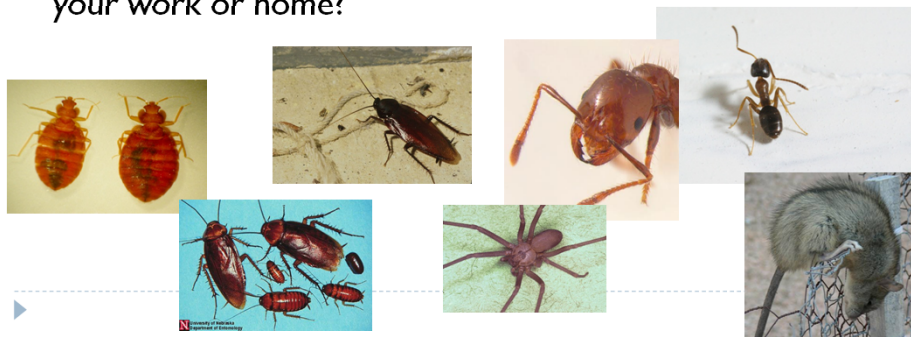


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Pesticide Safety & Regulations

There are many kinds of pests

- ▶ Each structure, crop, or animal have pests
 - ▶ Diseases and viruses can be pests of man or animal
- ▶ Ability to recognize or be able to identify the common pests will take time
- ▶ What are some of the more common pests you have in your work or home?



What are pesticides?

- ▶ A pesticide is any substance or mixture of substances intended for:
 - ▶ preventing,
 - ▶ destroying,
 - ▶ repelling, or
 - ▶ mitigating any pest.
- ▶ Though often misunderstood to refer only to insecticides, the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests.

Code of Federal Regulations, Title 40, Volume 16, Part 152

U.S. EPA <http://www.epa.gov/pesticides/about/index.htm>

What is not considered a Pesticide?

- ▶ Drugs used to control the diseases of humans or animals, which are regulated by the FDA
 - ▶ Low-risk substances such as cedar chips, garlic and mint oil are exempted from regulation by EPA
 - ▶ 25b classification
 - ▶ No signal word, mostly food based compounds
 - ▶ Pest control devices (i.e., mousetraps) are not pesticides, but subject to labeling requirements
 - ▶ Licensing requirements in Texas
-

Common household pesticides

- ▶ mosquito repellents
- ▶ disinfectants
- ▶ sanitizers
- ▶ mildew killers
- ▶ pressure-treated wood
- ▶ Yard treatments

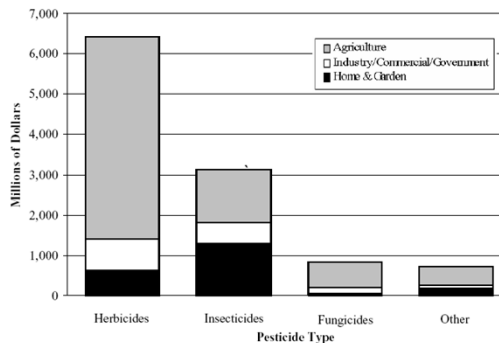


Collier Mosquito Control District, Florida

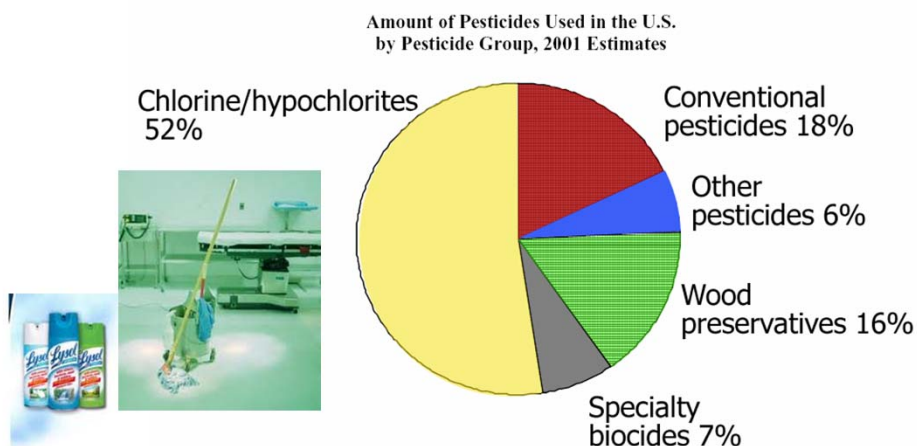
Pesticide use in the U.S.

- ▶ \$11 billion total sales 2001 (\$3 billion insecticides)
- ▶ 15% of insecticide sales are structural, horticultural and government use
- ▶ 15 million lbs per year in ICG sector

Figure 2.2
User Expenditures on Pesticides in the U.S.
by Pesticide Type and Market Sector, 2001 Estimates



Types of pesticides used in U.S.



How do pesticides work?

- ▶ **Nervous system poisons**
 - ▶ Affect nervous systems
- ▶ **Metabolic inhibitors**
 - ▶ Affect ability of target to process food
- ▶ **Hormone mimics**
 - ▶ Disrupt hormone systems
- ▶ **Physical poisons**
 - ▶ Physically damage insect
- ▶ **Repellents & attractants**



The dose makes the poison

- ▶ Paracelsus (1493-1541)
- ▶ “All substances are poisons; there is none which is not a poison. The right dose differentiates a poison and a remedy.”

Dosis facit venenum

„Was ist das nit
Gifft ist? Alle
Ding sind Gifft
und nichts ohn
Gifft. Allein die
Dosis macht, das ein
Ding kein Gifft ist.“

Paracelsus (1493-1541)



LD₅₀



Lethal Dose 50 - The amount of
material needed to kill half of a test
population

Oral vs. Dermal

Mg/Kg



Amount of toxin (in milligrams) per Kilogram of body weight of the test subject

EPA Pesticide Toxicity Classes

Categories of Acute Toxicity					
Category	Signal Word Required on Label	Oral Ld50 Mg/kg	Dermal LD50 mg/kg	Inhalation LC50 mg/l	Approximate Oral dose that can Kill an Average Person
I Highly toxic	DANGER- *[Poison! Skull Crossbones]	From 0 to 50	From 0 to 200	From 0 to 0.2	A few drops to 1 teaspoon full [or a few drops on the skin]
II Moderately Toxic	WARNING!	From 50 to 500	From 200 to 2000	From 0.2 to 2	Over 1 teaspoonful to 1 ounce
III Slightly Toxic	CAUTION!!	From 500 to 5000	From 2000 to 20,000	From 2.0 to 20	Over 1 ounce to 1 pint or 1 pound
III Slightly Toxic	CAUTION!!	More than 5000	More than 20,000	Greater than 20	Over 1 pint or 1 pound

Commonly used pesticides 1950-70

- ▶ **Organo-chlorines**
 - ▶ DDT
 - ▶ chlordane
 - ▶ lindane
 - ▶ heptachlor
 - ▶ dicofol (Kelthane®)
 - ▶ methoxychlor
- ▶ **Organophosphates**
 - ▶ malathion
 - ▶ diazinon
 - ▶ chlorpyrifos (Dursban®)
 - ▶ trichlorfon (Dylox®)
 - ▶ dimethoate (Cygon®)
- ▶ **Carbamates**
 - ▶ carbaryl (Sevin®)



Other insecticides in use 1950-70

- ▶ **Botanicals**
 - ▶ pyrethrum
 - ▶ nicotine sulfate
- ▶ **Dormant oils**
 - ▶ non-nerve toxin



Some modern insecticide classes

- ▶ botanicals
- ▶ pyrethroids
- ▶ carbamates
- ▶ nicotinoids
- ▶ fiproles
- ▶ pyridazinones
- ▶ juvenile hormone analogs
- ▶ chitin synthesis inhibitors
- ▶ avermectins
- ▶ spinosyns
- ▶ oils
- ▶ others

42 distinct insecticide groups and subgroups based on modes of action.

IRAC Mode of Action Classification v 3.3 October 2003



Insecticide Resistance Action Committee

Organic vs. synthetic

- ▶ Organic pesticides include products derived from natural sources
- ▶ Synthetic pesticides are human-produced



Are organic products inherently safe?



Giant hogweed



Poison ivy



Low impact pesticides

- ▶ Contact or short-lived insecticides
- ▶ Insect growth regulators
- ▶ Baits
- ▶ Microbial based products
- ▶ Other insecticides with low toxicity to beneficials and humans



Some terms

- ▶ *Contact* - you get what you hit
 - ▶ *Residual* - continues to kill on surfaces after dry
 - ▶ *Systemic* - refers to water soluble insecticides that are taken up in plant's phloem system
 - ▶ *Translaminar* - some movement into leaf, controlling insects on inside of leaf or on leaf undersides
-
- ▶

Who Regulates

- ▶ **Texas Department of State Health Services**
 - ▶ Immunizations
 - ▶ Public Health Sanitation Program
 - ▶ State, county or local city
 - ▶ **Texas Department of Agriculture – Structural Pest Control Service Division**
 - ▶ Pest Control Service
 - ▶ Agricultural Operations
 - ▶ **Texas Department of Family and Protective Services**
 - ▶ Child Care Licensing
 - ▶ New rules concerning sanitation inspections and ensuring a healthy environment for the child – adopted Sept 1, 2010
-
- ▶

DSHS & DFPS

▶ Public Health Sanitation Program

- ▶ Oversees food service inspections
 - ▶ Can be done by County or City officials
 - ▶ Must have a sanitation inspection before an initial permit is issued and at least once every 12 months, unless your operation is located in a public school facility operated by the local independent school district
 - Must keep a current copy of Report on site for viewing by public
 - If required, you must comply with corrections, restrictions, or conditions specified by the inspector in the sanitation report, letter, or checklist.
 - ▶ Requires immunization of children
 - ▶ http://www.dshs.state.tx.us/immunize/docs/school/6-15_2010-2011.pdf
-



TX Dept. of Agriculture

▶ Pest Control

- ▶ Regulates pest control companies and individuals who conduct some or all pest control activities at any hospital, nursing home, hotel, motel, lodge, warehouse, food-processing establishment, school or educational institution, or day-care
 - ▶ Commercial
 - ▶ Non-commercial
 - ▶ Pest Control Contractor must post sign 48 hours prior to any indoor treatment
 - ▶ School (ISD) property must notify at time of outdoor treatments
 - ▶ Aerial applications are required (if requested) to give prior notification to a school/child care center within 1/4 mile of the field on which pesticide are to be applied
-



Educational Institutions and Childcare Centers must notify parents at the time of enrollment that they occasionally apply pesticides.

- As part of our commitment to provide your child with a safe, pest-free learning environment, the Name of Facility may periodically apply pesticides to help manage insects, weeds or pathogens. Pesticide applications are part of our integrated pest management (IPM) program, which relies largely on non-chemical forms of pest control. Pesticide applications on Name of Facility property are made only by trained and licensed technicians. Should you have questions about this district's pest management program or wish to be notified in advance of pesticide applications, you may contact – list someone knowledgeable about your pest control contract if possible



Title 4, Part 1, Chapter 7, Subchapter H,
Divisions 3 RULE §7.147 CONSUMER
INFORMATION SHEET

- ▶ Personnel at a school or educational institution or a day-care center are required to inform the parents, guardians, or managing conservators of the children attending the school or day-care center, at the time the child is registered, that:
 - ▶ (1) the school, institution, or center periodically applies pesticides indoors and outdoors; and
 - ▶ (2) prior notice and information on the application of the pesticides is available from the school, institution, or center at the written request of the parents, guardians, or managing conservators. Telephonic, written or electronic notification will meet this requirement.



RULE §7.148 Responsibilities of Unlicensed Persons for Posting and Notification

- ▶ Employers, building managers, IPM Coordinators and chief administrators of workplaces, hospitals, nursing homes, hotels, motels, lodges, warehouses, food-processing establishments, school or educational institutions, and day-care centers **must post a pest control sign in an area of common access at least 48 hours prior to each planned treatment and provide a Consumer Information Sheet to any individual working or residing in the building at the request of that individual.** Area of common access means a common area that an individual is likely to observe on a regular basis, such as building entranceway, mailboxes, laundry rooms, beverage machines, building bulletin boards, etc. This requirement does not apply to new construction on school campuses where students have not yet been introduced.

Department of Family and Protective Services

- ▶ Healthy Environment
- ▶ Sanitizing process
- ▶ Disinfecting Solution
- ▶ Hand washing rules for employees and children
- ▶ Pest Control rules



Steps to Maintain a healthy environment

You must clean, repair, and maintain the building, grounds, and equipment to protect the health of the children. This includes, but is not limited to:

- ▶ Machine washing used cloth toys at least weekly and when contaminated;
- ▶ Machine washing used linens at least weekly, and when soiled or before a different child uses them;
- ▶ Sanitizing sleeping and rest equipment before a different child uses it and when soiled;
- ▶ Maintaining sand boxes and sand tables in a sanitary manner;
- ▶ Making all garbage inaccessible to children and managing it to keep the operation inside and outside, free of insects, rodents, and offensive odors, and disposing of it according to local and state requirements;
- ▶ Keeping all floors, ceilings, and walls in good repair and clean;
- ▶ Ensuring that all paints used at the operation are lead-free;
- ▶ Keeping all parts of the operation used by children well heated, lighted, and ventilated;
- ▶ Sanitizing table tops, furniture, and other similar equipment used by children when soiled or contaminated with matter such as food or body secretions; and
- ▶ Clearly marking cleaning supplies and other toxic materials and keeping them separate from food and inaccessible to children.



What is Sanitizing

Sanitizing requires a four-step process. For the sanitizing process to be effective, you must follow **these steps in order**:

- (1) Washing with water and soap;
- (2) Rinsing with clear water;
- (3) Soaking in or spraying on a disinfecting solution (at least two minutes). Rinsing with cool water only those items that children are likely to place in their mouths; and
- (4) Allowing the surface or article to air-dry.



What is a disinfecting solution

A disinfecting solution may be:

(1) A self-made solution, prepared as follows:

(A) One tablespoon of regular strength liquid household bleach to each gallon of water used for disinfecting such items as toys and eating utensils; or

(B) One-fourth cup of regular strength liquid household bleach to each gallon of water used for disinfecting surfaces; and

(C) You must prepare each solution daily and place it in a closed and labeled container; **OR**

(2) A commercial product that is registered with the Environmental Protection Agency (EPA) as an antimicrobial product and includes directions for use in a hospital as a disinfectant. You must use the product according to label directions. Commercial products must not be toxic on surfaces likely to be mouthed by children.



Other sanitation processes

▶ Items that may be washed in a dishwasher or hot cycle of a washing machine which **runs at a temperature of 160 degrees Fahrenheit** or higher for five or more minutes do not need additional disinfecting, because these machines use water that is hot enough, for long enough, to kill most germs.

▶ **Footnote**

▶ For items that need to be dried at high heat – should be run on hot in the dryer for at least 1 hour

▶ You can also place some items in large black trash bags for 5 to 7 hours outside to ensure insect kill



Pest control

- ▶ You may treat your operation for pests only if you are certified as a noncommercial applicator by the Texas Department of Agriculture. Otherwise, you must use a pest control operator licensed by the Texas Department of Agriculture to prevent, control, or eliminate pest infestations at your operation, **including the use of over-the-counter products** designed for controlling insects, rodents, and other pests.
-
- ▶

General Precautions for pest control

- (a) Children must not be allowed in areas where there is pesticide residue that may be harmful to them. Follow written instructions from the licensed pest control operator or label directions in order to determine whether the residue may be harmful to children.
 - (b) Areas where children are present may be treated with chemicals only when permissible under the label directions. *** *this is never recommended – even applying insect baits can lead to other problems.*
-
- ▶

New Changes for Rodenticide Use

- ▶ EPA Risk Mitigation Decision (RMD)
- ▶ 10 year review of rodenticide active ingredients
- ▶ Focused on human and environmental risks versus public health and other benefits associated with use
 - ▶ Research indicated that second generation actives were found in the tissue of numerous wildlife casualties (secondary deaths)



EPA RMD Professional Users

- ▶ **Size Restrictions will be Implemented**
 - ▶ Second-Generation Anticoagulants (Conrac, Final, Formus).
 - ▶ Must be sold in 16lb or larger case sizes.
 - ▶ Ex. 4 x 4lb case of pails is allowed, minimum container size = 4lb.
 - ▶ First-Generation Anticoagulants & Non-Anticoagulants (Ditrac, F-Trac, Terad3, Terad3Ag, ZP).
 - ▶ Must be sold in 4lb or larger sizes, minimum container size = 4lb.
- ▶ **Product Labeling Updates**
 - ▶ All outdoor, above ground applications will require the use of bait Stations.
 - **If exposed to children or non-target animals these stations must be tamper resistant.**
 - ▶ Outdoor placements must be within 50 feet of a building.
 - ▶ Various precautionary, storage and disposal updates
- ▶ **No restrictions on bait form** – All bait forms are acceptable for professional users (Blox, SuperBlox, Pellets, Meal, Cake, Liquid).
- ▶ **No change to the quantity or amount of placements**



EPA RMD for Agricultural Users

- ▶ **Size Restrictions Will Be Implemented**
 - ▶ **First Generation Anticoagulants & Non-anticoagulants**
 - ▶ Must be sold in 4lb or larger sizes, minimum container size = 4lb
 - ▶ **Second-Generation Anticoagulants**
 - ▶ Must be sold in 8LB or larger case sizes (Ag specific label)
 - ▶ Ex 2 x 4lb case of pails is allowed, minimum container 4lbs
- ▶ **Use Restrictions**
 - ▶ Second generation use is restricted to in and around agricultural buildings only.
 - ▶ NO structural applications beyond agricultural uses.



EPA RMD for Agricultural Users

- ▶ **Product Labeling Updates**
 - ▶ All outdoor above ground applications will require the use of bait stations
 - ▶ Outdoor placement must be within 50 feet of a building
 - ▶ Various precautionary, storage and disposal updates
 - ▶ *If exposed to children or non-target animals these station must be tamper resistant.*
- ▶ **No restrictions on bait form – All bait forms are acceptable for agricultural users (Blox, SuperBlox, Pellets, Meal, Cake, Liquid)**
- ▶ **No change to the quantity or amount of placement**



EPA RMD – Retail Consumers

▶ **Restrictions To Type Of Active Allowed**

- ▶ Second-Generation Anticoagulants will NOT be allowed.
- ▶ First-Generation Anticoagulants & Non-anticoagulants are allowed.

▶ **Restrictions To Bait Form**

- ▶ Pelleted bait is NOT allowed.
- ▶ Bait must be sold in block or solid form.

▶ **Bait must be sold in or with a bait station**

▶ **Package sizes restricted to 1lb of bait or less**



QUESTIONS

