



Pediatric Poisoning

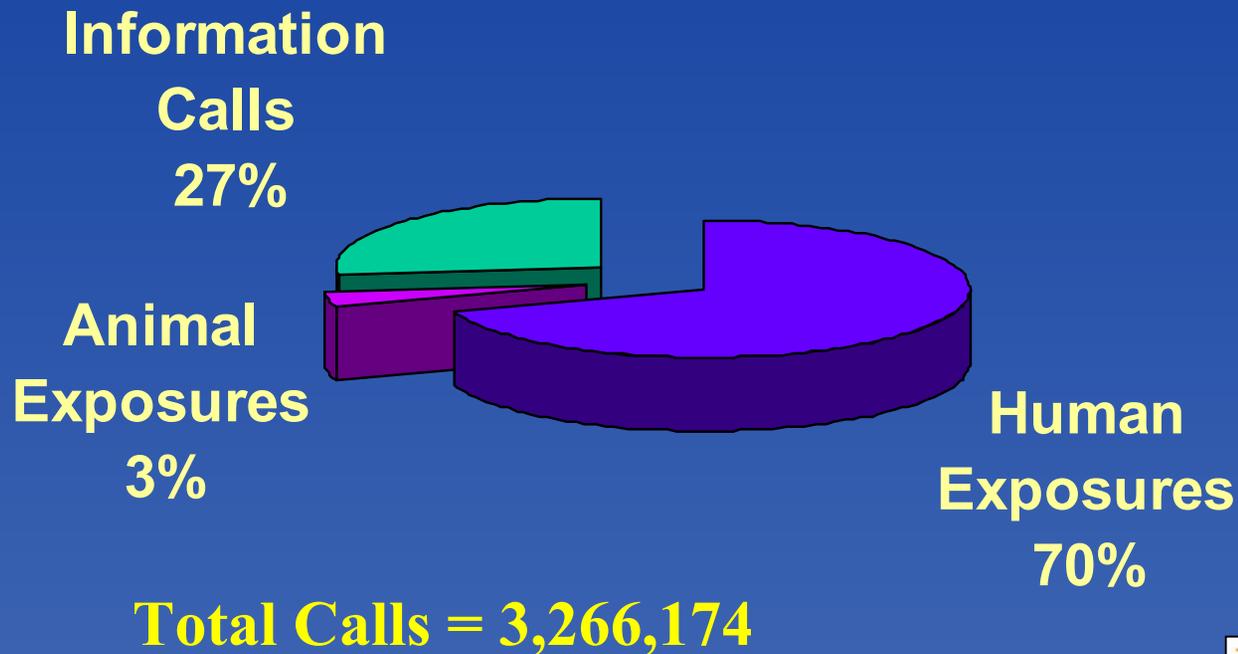
John P. Lamb, Pharm.D., CSPI

Sacramento Division

at U C Davis Medical Center

Pediatric Poisoning

National Call Volume, 2001

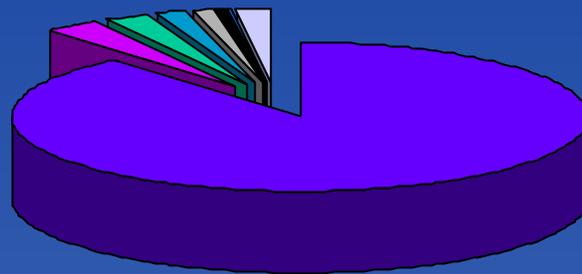


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Pediatric Poisoning

Site of Exposure, 2001



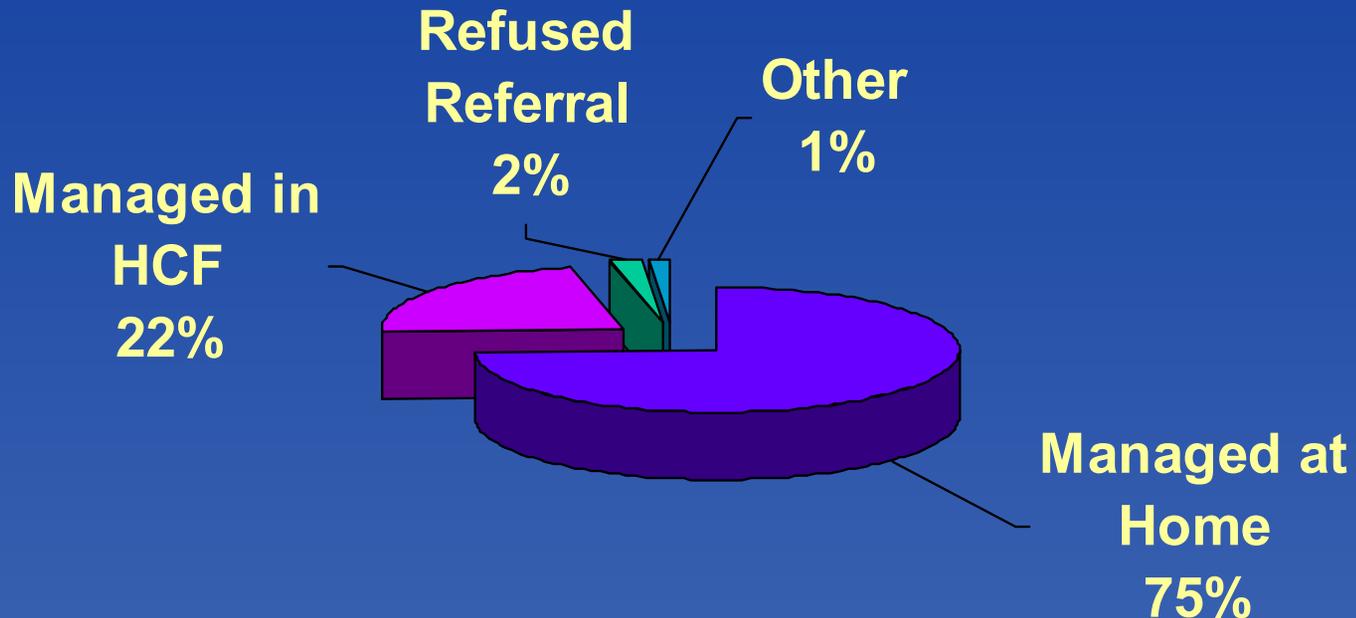
90%

Total Exposures = 2,267,979



Pediatric Poisoning

Management Site, 2001



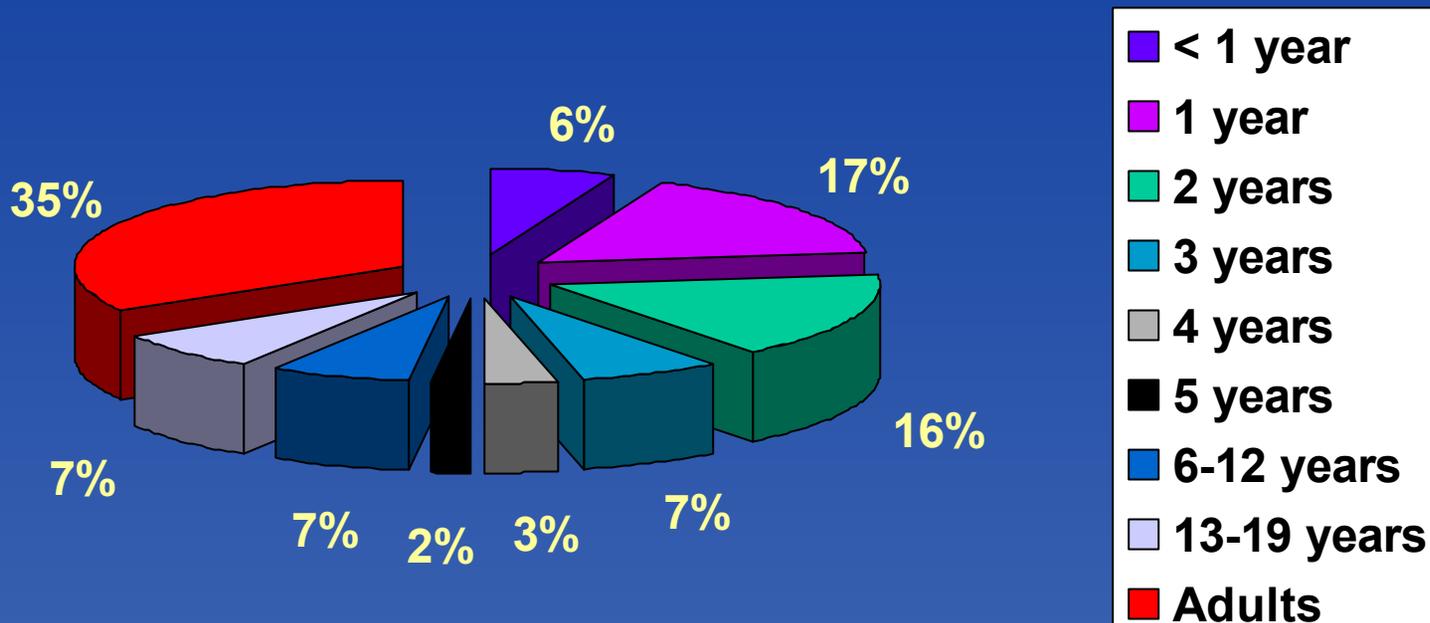
Human Exposures = 2,267,979

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Pediatric Poisoning

Exposures by Age, 2001



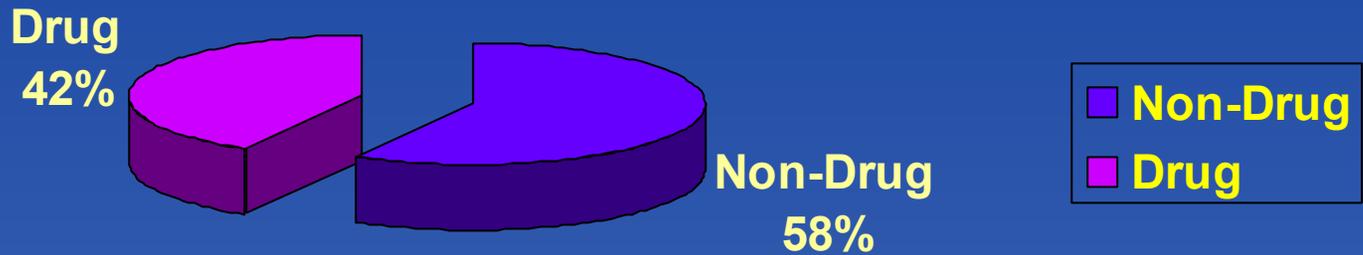
Human Exposures = 2,267,979

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Pediatric Poisoning

Total Exposures Children <6



Total = 1,209,294

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Pediatric Poisoning

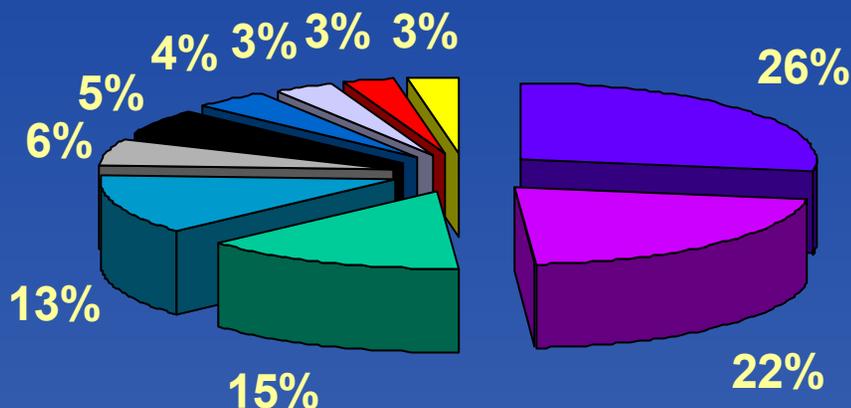


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Pediatric Poisoning

Non Drug Poisons, Children < 6



Total = 551,581 of 704,660

- Cosmetics
- Cleaners
- Foreign Bodies
- Plants
- Pens/Inks
- Pesticides
- Hydrocarbons
- Foods
- Rodenticides
- Alcohols

Pediatric Poisoning

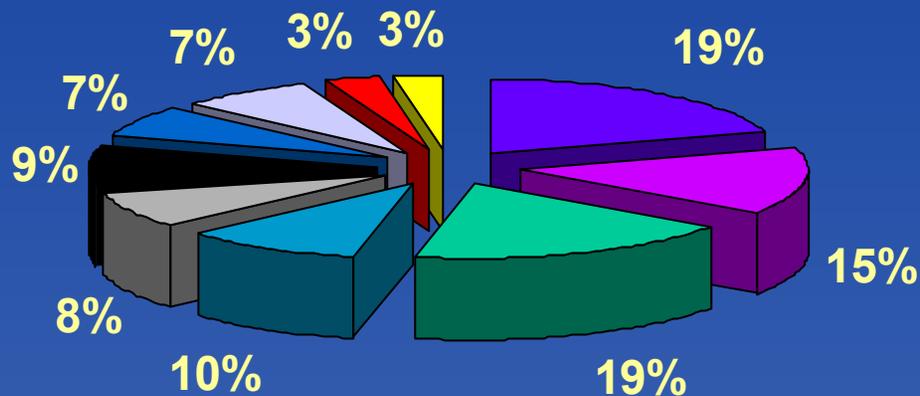


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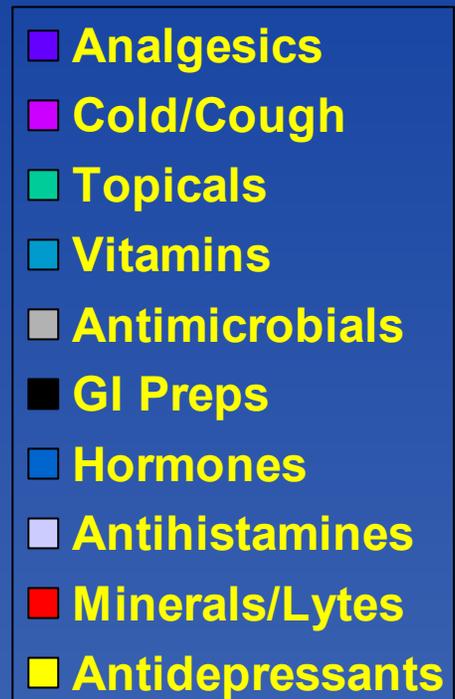


Pediatric Poisoning

Drug Poisonings Children < 6

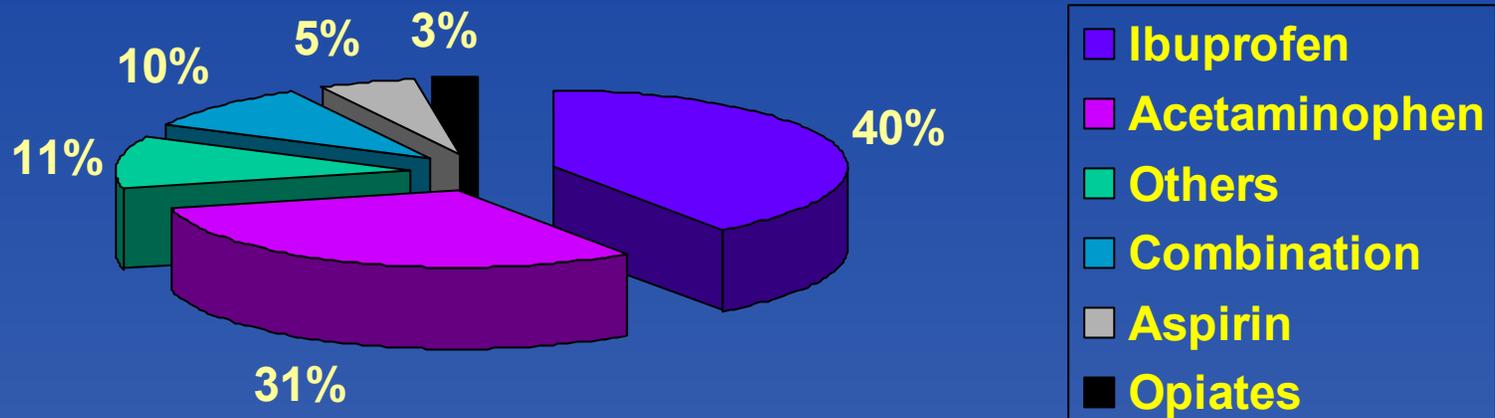


Total = 413,330 of 504,634



Pediatric Poisoning

Analgesic Exposures in Children < 6



Total = 83,166

Pediatric Poisoning

Common Characteristics:

❖ Availability



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Pediatric Poisoning



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Pediatric Poisoning

Pesticide Availability

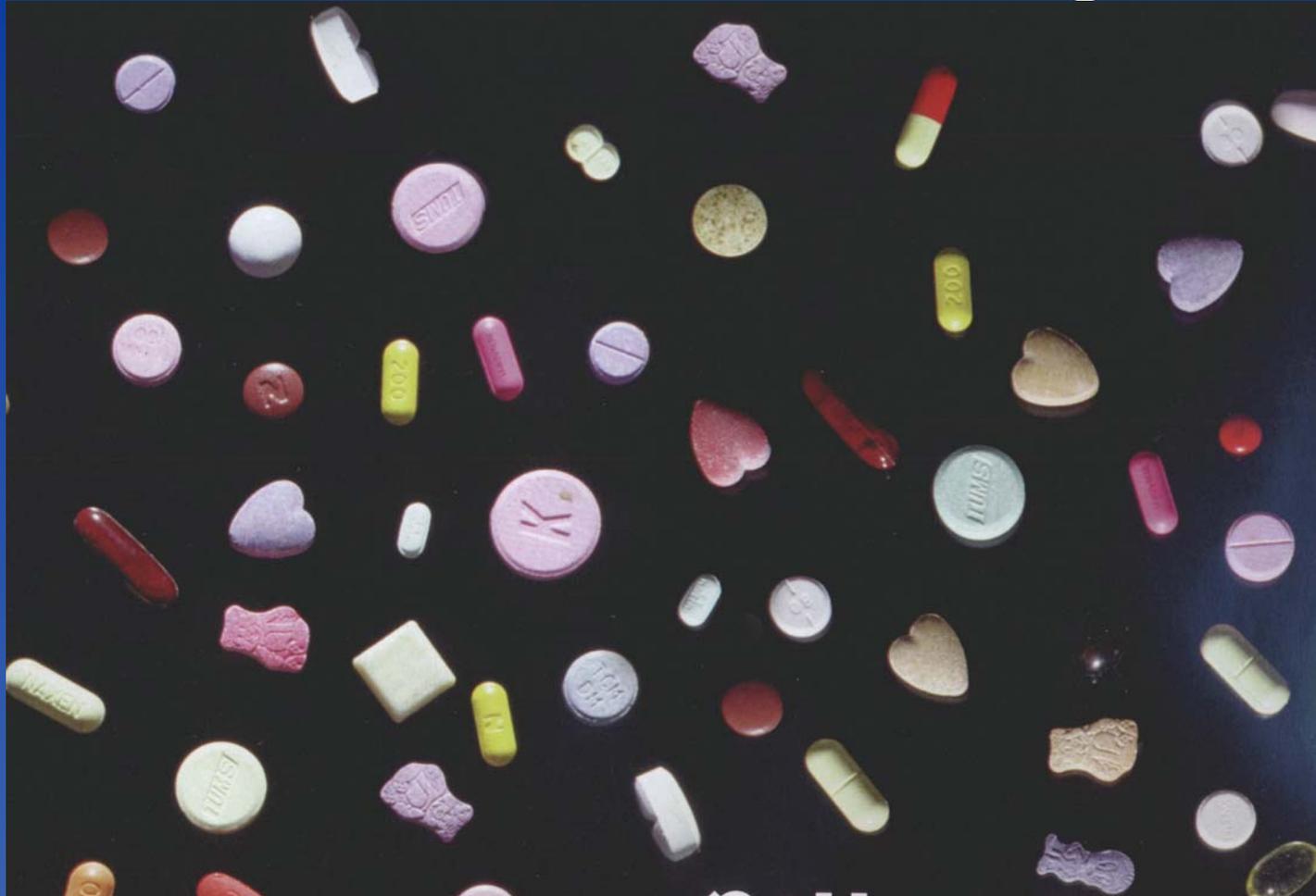
- ❖ U.S. EPA Survey—Pesticides stored in unlocked cabinet, less than 4 ft high:
 - ◆ 47% of all households with children <5
 - ◆ 75% of households without children <5
- ❖ 13% of pesticide poisonings occur in homes other than the child's home.

Pediatric Poisoning

Common Characteristics:

- ❖ Availability
- ❖ Attractiveness

Pediatric Poisoning



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Pediatric Poisoning



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Pediatric Poisoning



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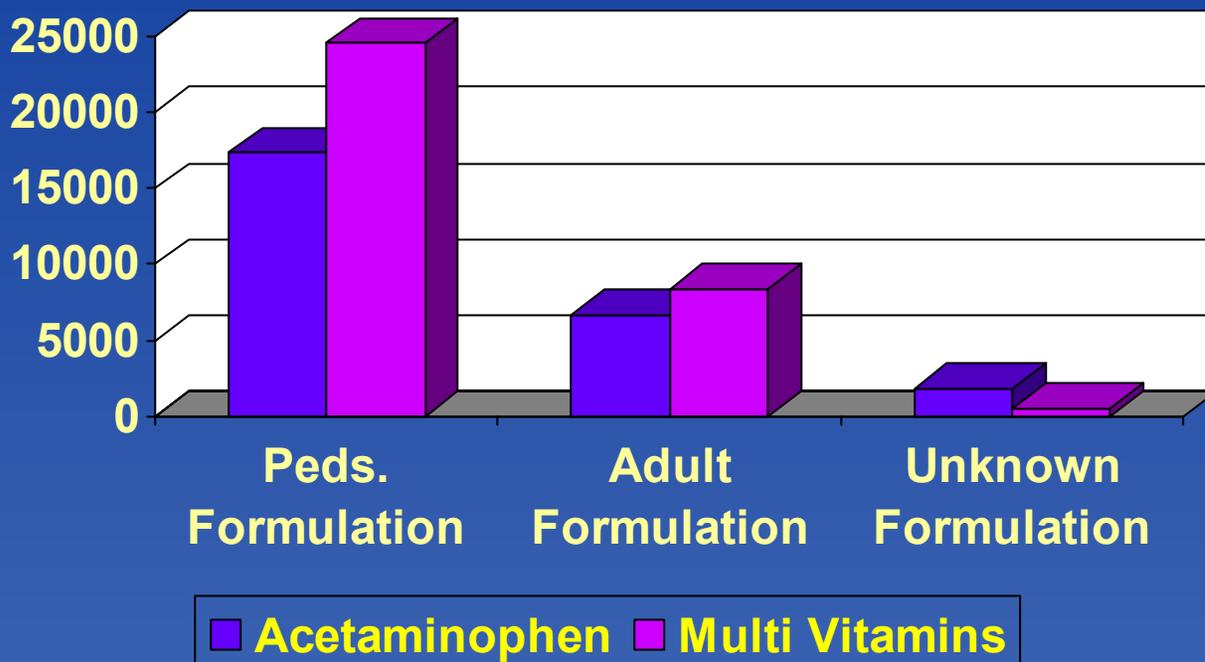
Pediatric Poisoning

Common Characteristics:

- ❖ Availability
- ❖ Attractiveness
- ❖ “Taste”

Pediatric Poisoning

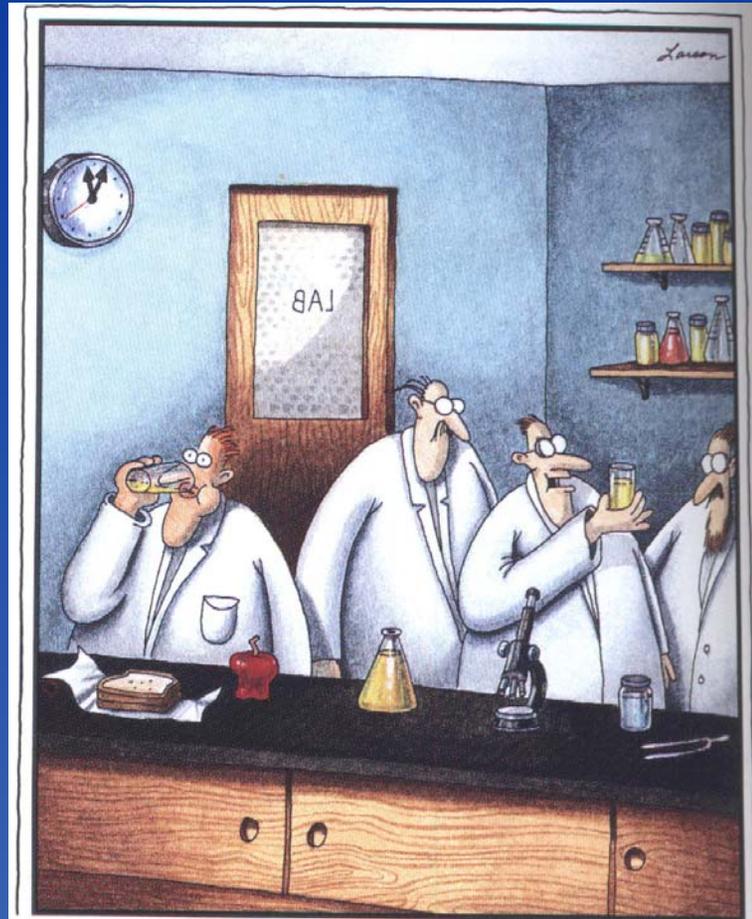
Taste and Exposure Incidence



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Pediatric Poisoning



"What the? ... This is lemonade! Where's my culture of amoebic dysentery?"

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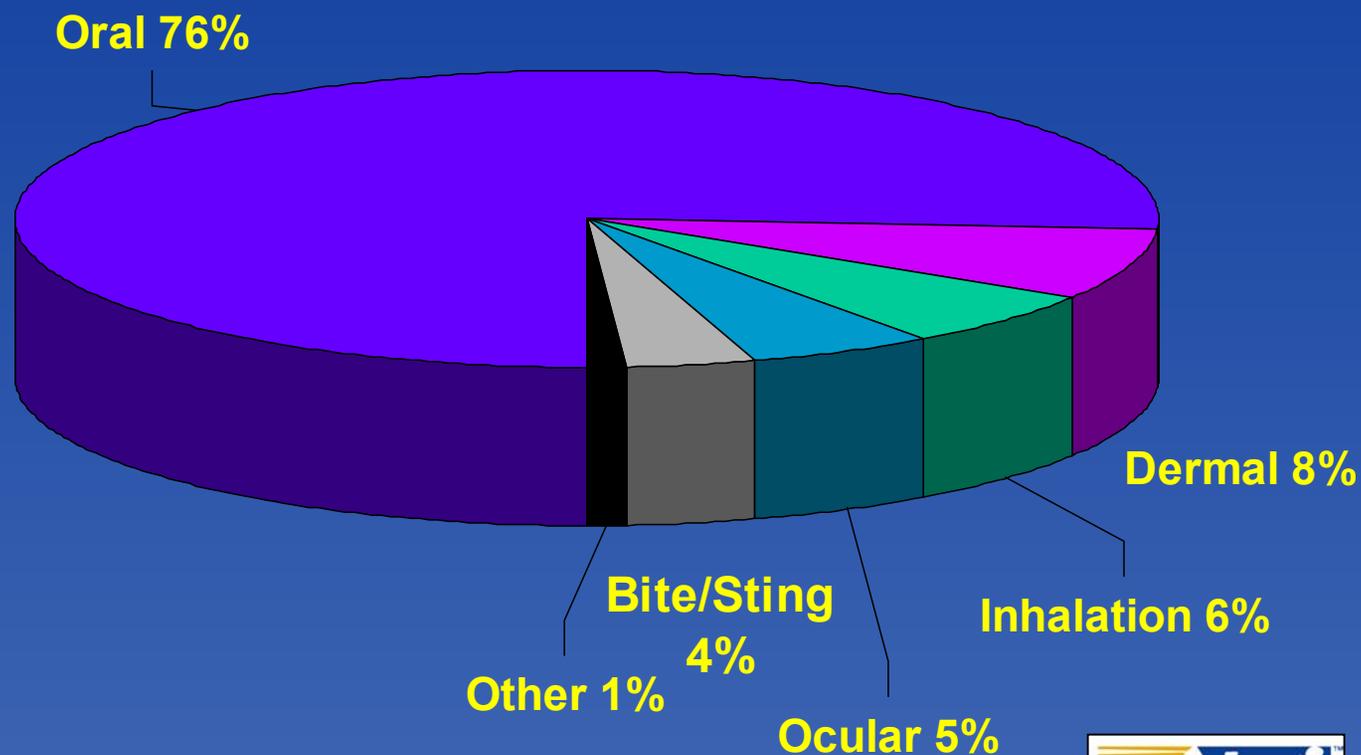


Pesticide Toxicology

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California Poison Control System
Sacramento Division at UCDCMC

Routes of Exposure

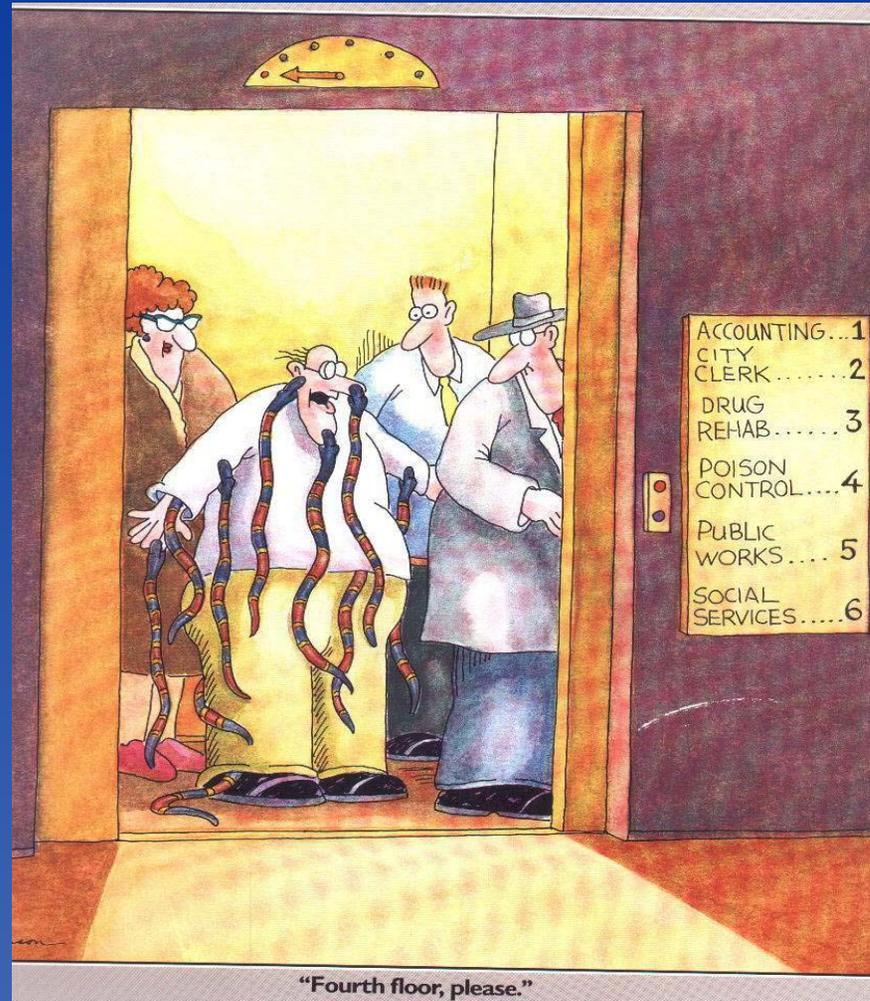
AAPCC National Data, 2002
Total Exposures = 2,500,106



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Routes of Exposure

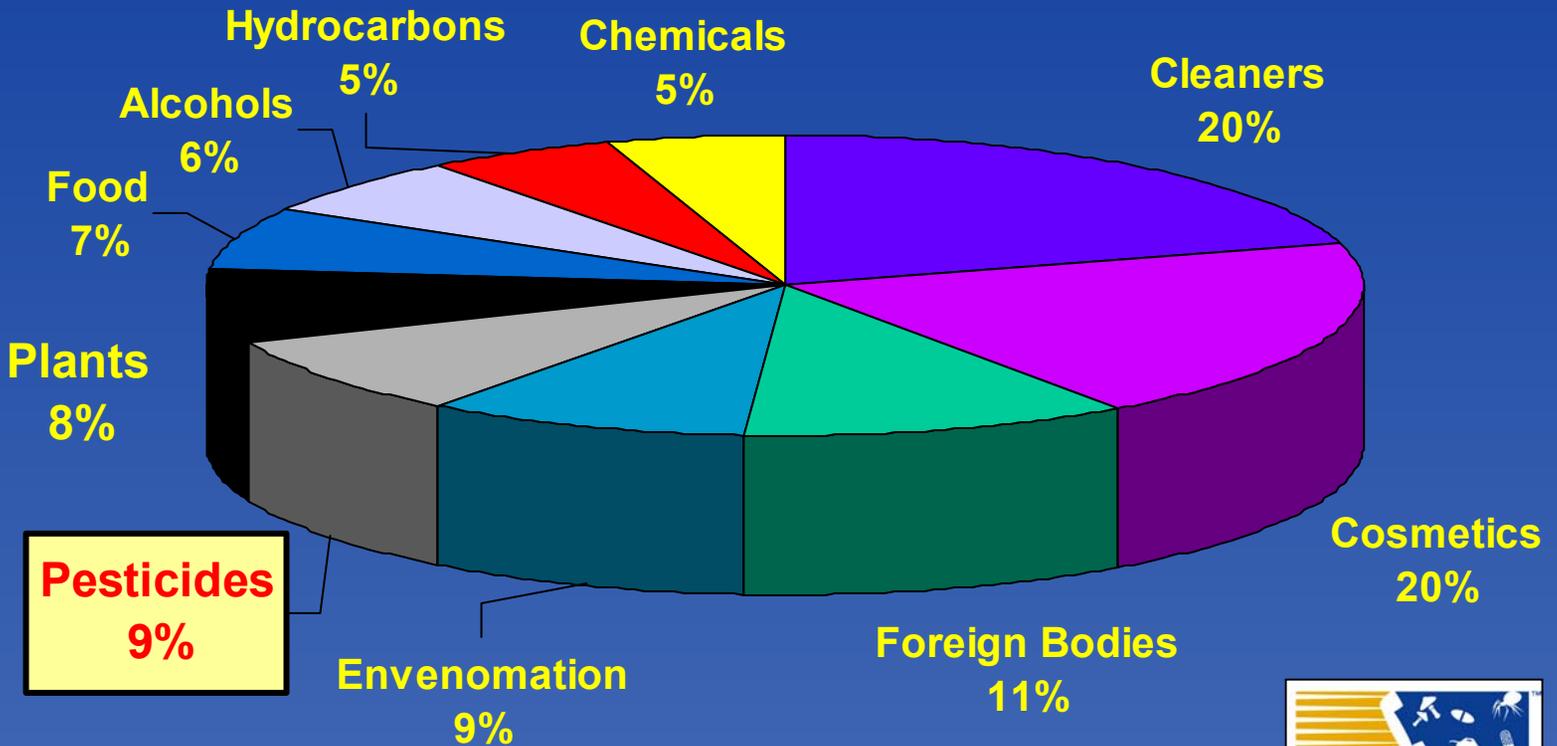


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Top Non-Drug Poisonings

AAPCC National Data, 2002
Total Exposures = 1,102,836

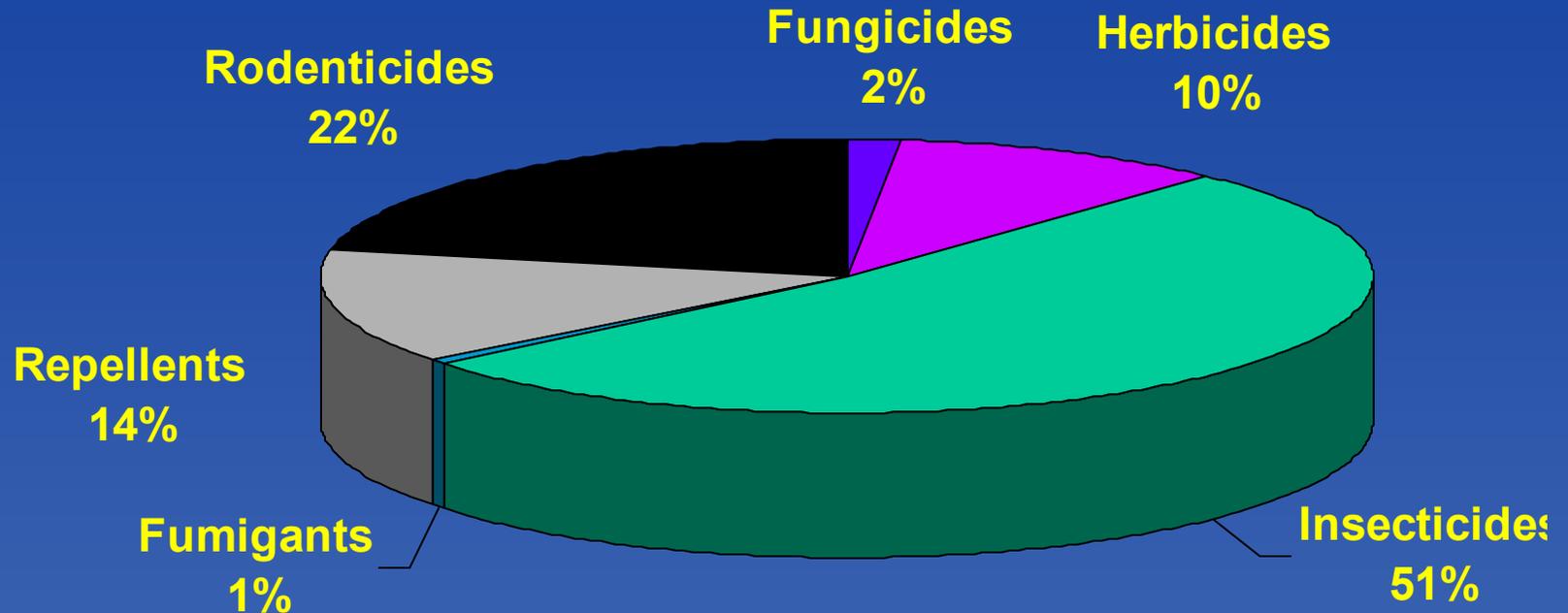


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Pesticide Exposures

AAPCC National Data, 2002
Total Exposures = 96112

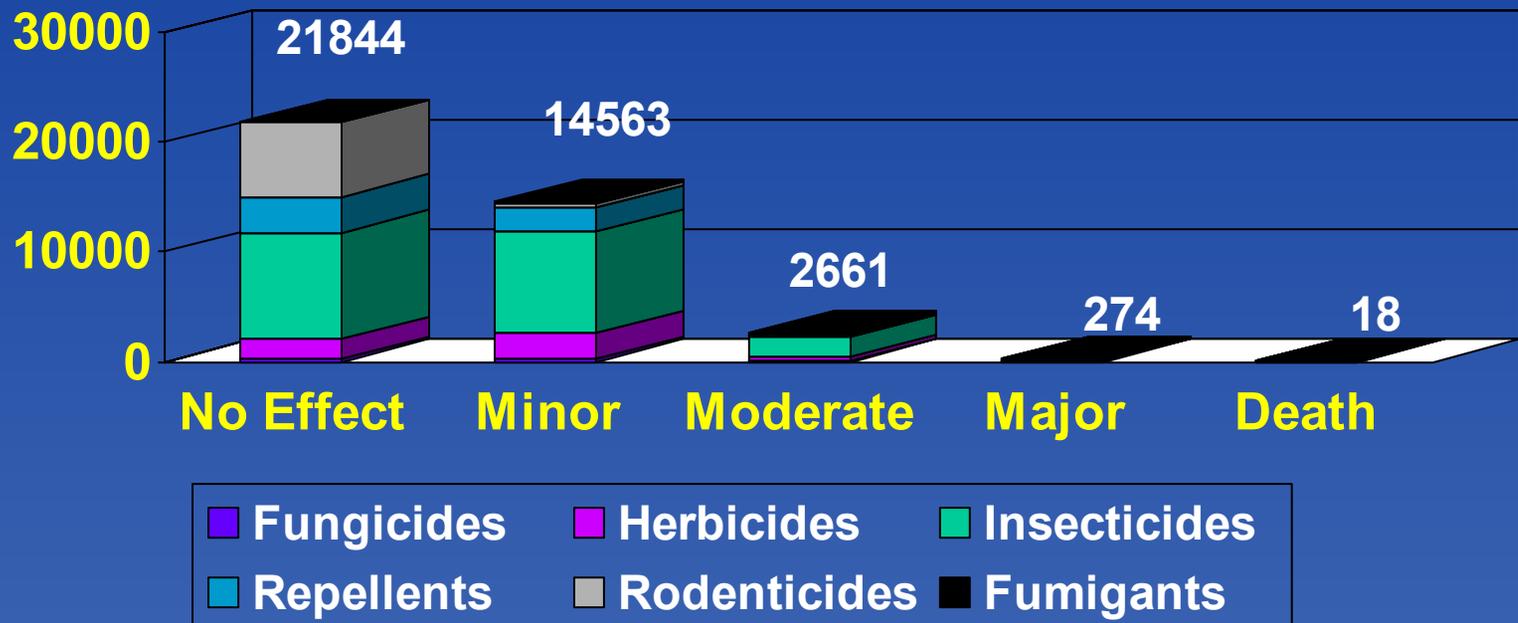


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Pesticide Exposure Outcomes

AAPCC National Data, 2002
Total Exposures = 39360



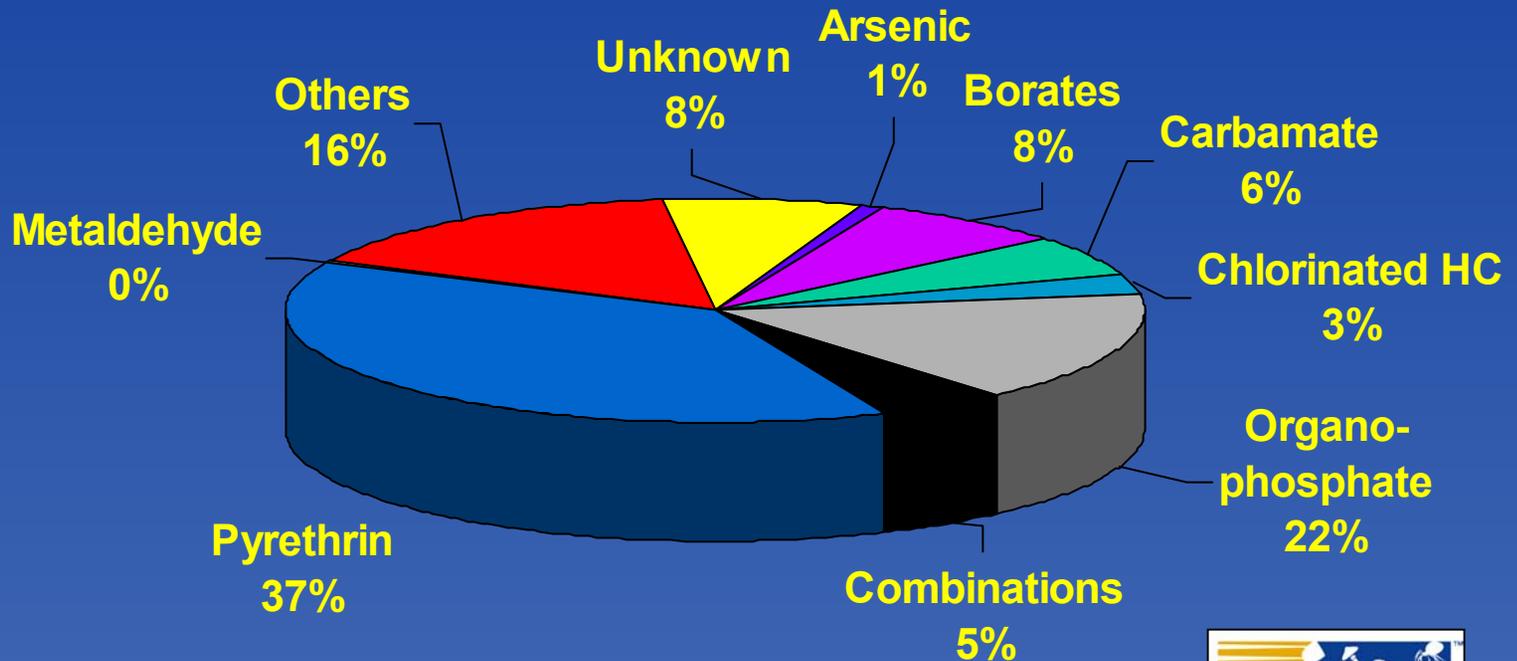
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Insecticide Exposures

AAPCC National Data, 2002

Total Exposures = 50881



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Organophosphates

- ❖ **Mechanism:**
 - ◆ **Phosphorylation of Acetylcholinesterase causes accumulation of Acetyl Choline.**
- ❖ **Muscarinic and Nicotinic Effects**
- ❖ **Examples:**
 - ◆ **Parathion**
 - ◆ **Dichlorvos (DDVP)**
 - ◆ **Chlorpyrifos (Dursban)**
 - ◆ **Malathion**

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Carbamates

- ❖ Mechanism:

- ◆ Reversible carbamylation of Acetyl Cholinesterase allows accumulation of Acetyl Choline

- ❖ Muscarinic and Nicotinic Effects

- ❖ Examples:

- ◆ Aldicarb
- ◆ Propoxur (Baygon)
- ◆ Carbaryl (Sevin)

Cholinesterase Inhibitors

Symptoms

- ❖ **SLUDGE**
 - ◆ **Salivation**
 - ◆ **Lacrimation**
 - ◆ **Urination**
 - ◆ **Diarrhea**
 - ◆ **Gastric cramping**
 - ◆ **Emesis**
- ❖ **Bradycardia**
- ❖ **Pulmonary Edema**
- ❖ **Neurologic**

Cholinesterase Inhibitors

Treatment

- ❖ Decontamination:
 - ◆ **Protect Treating Personnel**
 - ◆ **Clothing/Leather**
 - ◆ **Triple Decontamination**
 - ◆ **Charcoal**
- ❖ **Atropine (for Muscarinic Effects)**
- ❖ **Pralidoxime (for Nicotinic Effects)**
- ❖ **Supportive Treatment**

Secondary Contamination

Pesticide used in suicide try

Associated Press

LODI — Seven emergency personnel and two other people were overcome by fumes from a high concentration of pesticide consumed by a man in an apparent suicide attempt Friday, authorities said.

The unidentified 35-year-old man who drank malathion was in critical condition, but the others were treated and released, said Lodi Memorial Hospital spokes-

woman Penny Jacobi.

The hospital's emergency room was closed for decontamination for about four hours, said Jacobi. Incoming patients were diverted to another hospital in the city.

Two of the man's family members were the first to be overcome. Six firefighters and paramedics were overcome when they arrived at the man's home. A nurse was overcome when the man arrived at the hospital for treatment.

Pyrethrins

- ❖ Derived from *Chrysanthemums*
- ❖ Low Mammalian Toxicity
- ❖ Paralyze Insect Nervous Systems
- ❖ Quick Knockdown
- ❖ Often Combined with Piperonyl Butoxide

- ❖ Examples:
 - ◆ Fenvalerate
 - ◆ Permethrin

Pyrethrins

Toxicity

- ❖ **Inhalation Exposure:**
 - ◆ **Stuffy Nose, Scratchy Throat**
- ❖ **Oral Exposure:**
 - ◆ **Dizziness, Headache**
 - ◆ **Nausea, Vomiting**
 - ◆ **Fatigue, Weakness**
- ❖ **Allergic Reactions:**
 - ◆ **Wheezing, Bronchospasm**

Pyrethrins Treatment

❖ Decontamination

- ◆ Wash
- ◆ Lavage
- ◆ Charcoal

❖ Supportive Treatment

- ◆ Anaphylaxis
- ◆ Seizures

Chlorinated Hydrocarbons

- ❖ Neurotoxic "Axon Poisons"
- ❖ Examples:
 - ◆ Lindane
 - ◆ Chlordane
 - ◆ Kepone
 - ◆ DDT
- ❖ U.S. E.P.A. Restrictions
 - ◆ DDT, Chlordane

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Chlorinated Hydrocarbons

Toxicity

- ❖ **CNS Excitation**
 - ◆ Tremor
 - ◆ Ataxia
 - ◆ Convulsions
- ❖ **GI Symptoms**
- ❖ **Dermal Irritation**

Chlorinated Hydrocarbons Treatment

❖ Decontamination:

- ◆ Clothing/Leather

- ◆ Wash

- ◆ Lavage

- ◆ Charcoal

❖ Seizure Treatment

Methoprene

- ❖ Insect Growth Regulator
- ❖ Very Low Toxicity to Non-Target Species
- ❖ No Eye or Skin Irritation

Hydramethylnon

- ❖ A slow acting insecticide which affects the immune system of insects.
- ❖ Products: Amdro, Combat, Maxforce
- ❖ No reports of human toxicity
- ❖ According to the manufacturer, a 20 kg dog would have to eat 250 trays of Combat Ant Killing System to have any adverse effects

N-Ethyl Perfluorooctane Sulfonamide

❖ Products:

◆ Enforcer Ant Baits

◆ Raid Ant Baits Plus, Raid Max Ant Bait

❖ Ingredients include Peanut Butter 75-85%, Sugar 5-10%, and Sulfuramid 0.5%

❖ Container size = 0.06 oz bait

❖ LD50 for dog = 500 mg/Kg

◆ For 30 pound (13.6 Kg) dog, 1360 grams of bait = ~2.83 pounds = ~756 containers!

Thermagation

Well, at least they got rid of the bugs

ASSOCIATED PRESS

SANTA CRUZ - Charles Savoca was looking forward to ridding his house of termites, but he didn't realize the whole house would be gone as well.

Exterminators on Monday accidentally blew up Savoca's house while using "thermagation" - an alternative to fumigation - to get rid of termites and ants.

For whole-house thermagation, a tarp is draped around the home.

Propane heaters set up outside the house generate heat on the exterior walls and on the inside through portable duct systems. The temperature inside the house reaches 140 to 150 degrees, and the bugs are basically cooked to death.

It's typically an effective way to rid a house of insects. But in Savoca's case, something went wrong. First one propane tank blew up from the heat, and then four or five others followed.

It took five air tankers, three helicopters and dozens of firefighters two hours to control the blaze, which decimated Savoca's home, leaving only a blackened concrete slab.

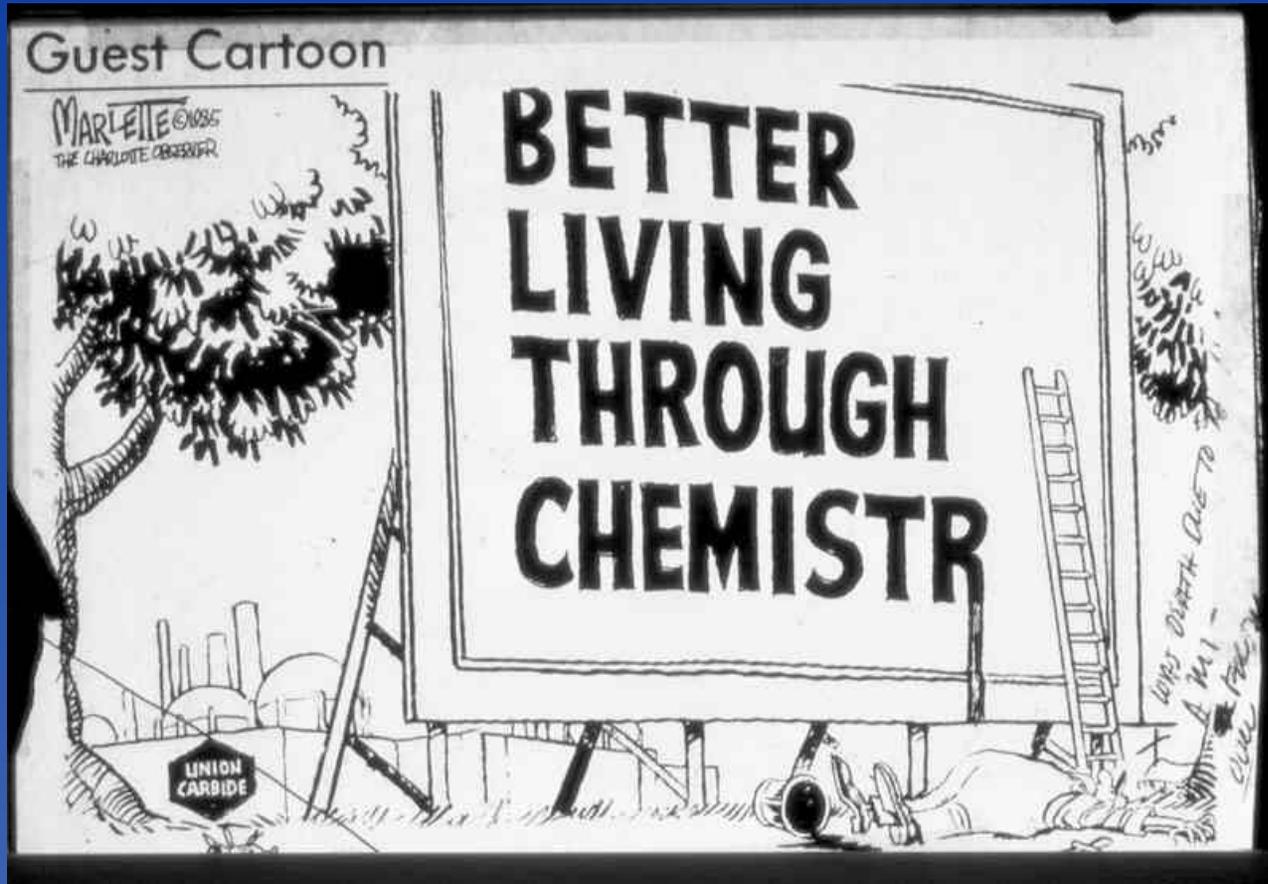
"I hired them thinking they had the expertise to do this without burning my house down," Savoca said. "They sure exterminated my house."

Sacbee 10/9/02

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Herbicides

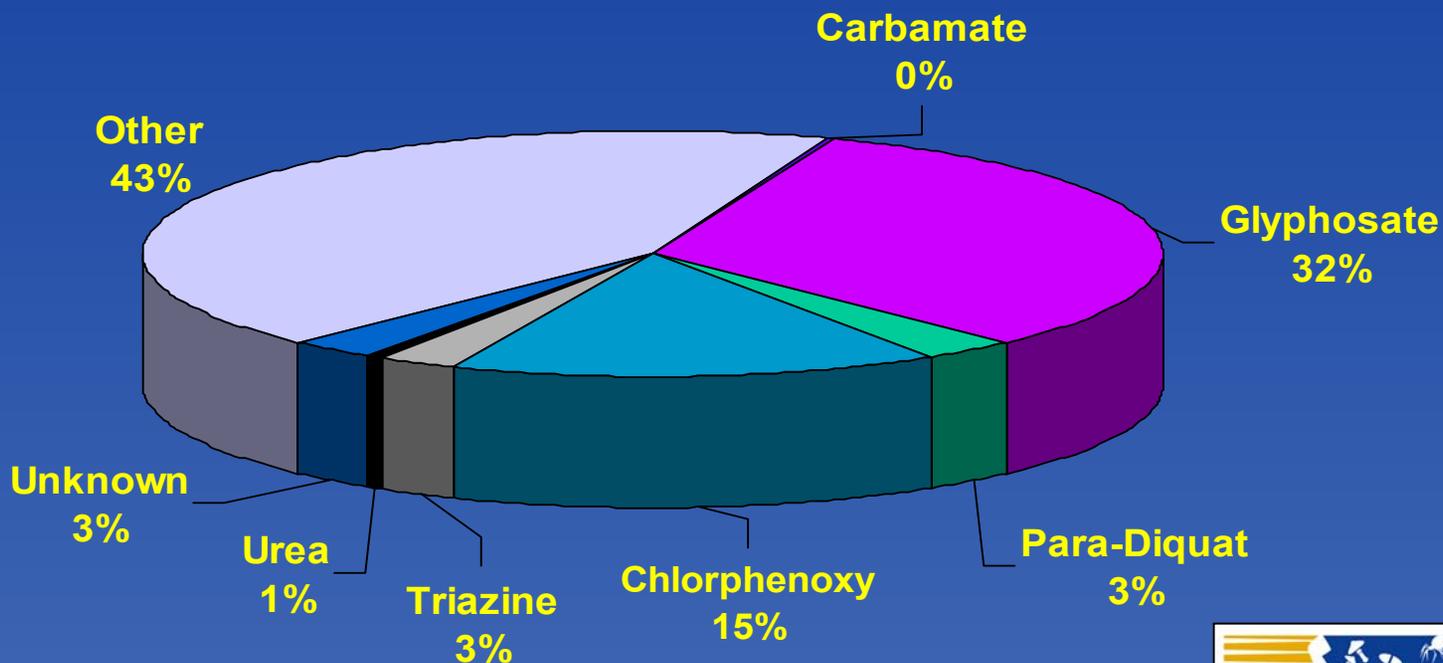


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Herbicide Exposures

AAPCC National Data, 2002
Total Exposures = 14,021



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Chlorphenoxy Compounds

- ❖ Several Hundred Products:
 - ◆ 2,4-D 2,4,5-T
- ❖ Irritating to Skin, Eyes, Respiratory and GI Tracts
- ❖ Ingestion causes Emesis, Abdominal Pain, and Diarrhea
- ❖ Very Large Ingestion can cause Metabolic Acidosis

Paraquat and Diquat

- ❖ Highly toxic to lung, liver, heart, kidney, and adrenal glands.
- ❖ Paraquat can cause pulmonary fibrosis after 5 to 10 days.
- ❖ Diquat can cause cerebral lesions.
- ❖ Can be absorbed through abraded skin.
- ❖ Treatment:
 - ◆ **Decontamination and Dialysis**

Pentachlorophenols/Nitrophenols

- ❖ Irritating to skin, eyes, lungs.
- ❖ Toxic to liver, kidneys, and CNS.
- ❖ Cause pyrexia by increasing cell metabolism, and most severe exposures are in hot environments.
- ❖ Treatment:
 - ◆ Decontamination
 - ◆ Lower fever
 - ◆ Oxygen to decrease tissue anoxia

Lower Toxicity Herbicides

❖ Carbamates

- ◆ Do not inhibit cholinesterase
- ◆ Dermatitis, Stuffy nose, GI upset
- ◆ "Antabuse" reaction with Alcohol

❖ Glyphosate (Round Up)

- ◆ Mucous membrane irritation, GI pain,
- ◆ Emesis, Hypotension, Anuria.
- ◆ Can cause Esophageal or Gastric Erosion
- ◆ Mean toxic dose = 104 ml concentrate

Lower Toxicity Herbicides

❖ Urea Substituted

- ◆ Can cause GI upset

- ◆ Can cause Methemoglobinemia

- ◆ Examples:

 - ❖ Diuron

 - ❖ Fenuron

Cockroach Slain, Husband Badly Hurt

Reuters

Tel Aviv

An Israeli housewife's fight with a stubborn cockroach put her husband in the hospital with burns, a broken pelvis and broken ribs, the Jerusalem Post newspaper reported yesterday.

The wife, frightened by the insect when she found it in their living room, stepped on it, threw it in a toilet and sprayed a full can of insecticide on it when it refused to die.

Her husband came home from work, went to the toilet and lit a cigaret. When he threw the cigaret butt into the bowl, the insecticide fumes ignited, "seriously burning his sensitive parts," the Post wrote.

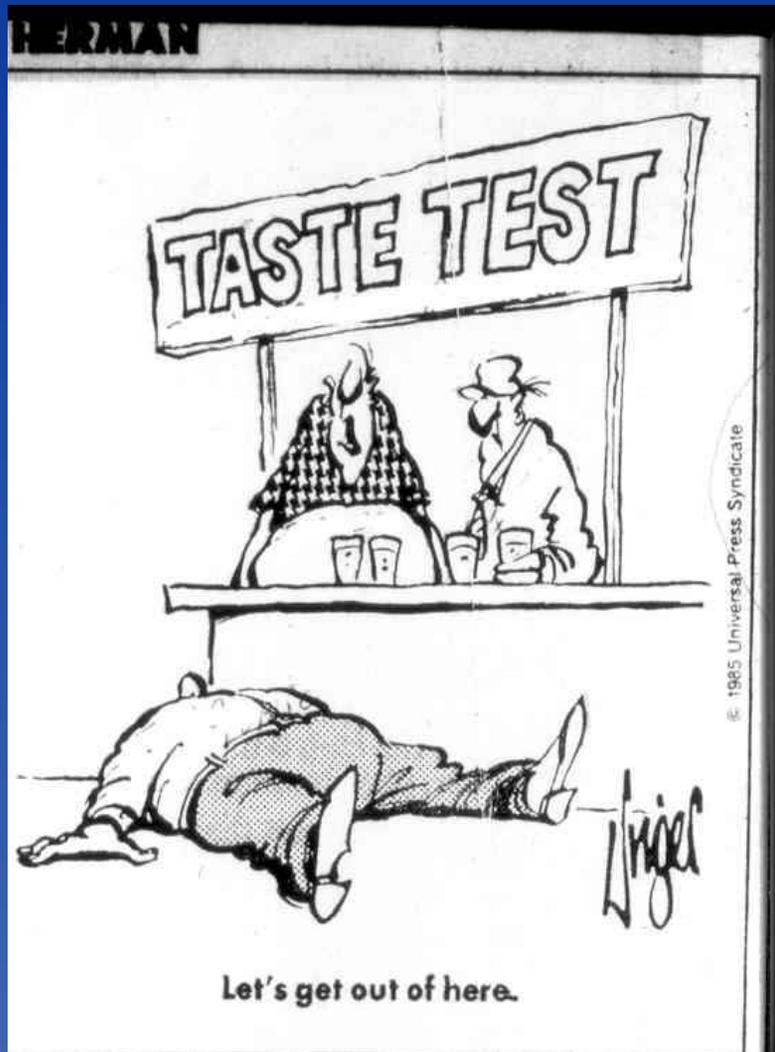
When paramedics were called to the home in Tel Aviv, they laughed so hard when they learned what had happened that they dropped the stretcher down the stairs, breaking the unidentified man's pelvis and ribs.

8-22-88
SF Chron

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Pesticide Toxicology



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