

Known / Suspected Health Effects Associated with Housing Conditions

- Respiratory infections
- Asthma
- Injuries and burns
- Reactions to extreme cold and extreme heat
- Irritations, allergy, rashes
- Poisonings, asphyxiation
- Neurotoxic exposures
- Cancer
- Death



Health Hazards

- Lead
- Mercury
- Tobacco smoke
- Carbon monoxide
- Food contaminants
- Water pollution
- Pesticides
- Air pollution
- Dust Mites
- Mold
- Pests & Rodents
- Pets
- Chemicals
- Radon
- Asbestos



WHAT IS THE COST OF UNHEALTHY HOMES?



The Cost of Unhealthy Homes

- Annual costs for environmentally attributable childhood diseases in the U.S: \$54.9 billion.
- \$43.9 Billion from Lead Poisoning
- \$ 9.2 Billion from Neurobehavioral Disorders
- \$ 3.2 Billion from Asthma
- \$ 0.3 Billion from Childhood Cancer



Categorical vs Holistic Approach

- Allergens/asthma
 - Asbestos
- Combustion products
 - Lead
- Mold and Moisture
- Insects and Rodents
- Weatherization

- Integrated approach
- People living in the home
- The structure
- Potential health hazards



The House as a System What's a house?



Seven Principles of Healthy Homes

- Start with People
- Keep It Dry
- Keep It Clean
- Keep It Pest-Free
- Keep It Ventilated
- Keep It Safe
- Avoid Contaminants
- Maintain the House



15

Start With People



KEEP IT DRY





Why do we want homes that are clean and easily cleanable?

- Reduced exposure to:
 - Chemical contaminants
 - Allergens
 - Pest droppings and urine
 - Pesticides and consumer chemicals
 - Heavy metals such as lead and arsenic
- Reduced harborage for pests



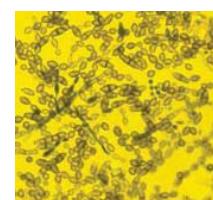
   

Environmental Allergens

- Animals
- Dust Mites
- Molds
- Tree Pollen
- Grass Pollen
- Weed Pollen
- Latex
- Foods
- Stinging Insects
- Medications







Humid buildings may be colonized by dust mites. In dry climates dust mites are limited to porous materials that get humidified.




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Isolate Problems



Keep pets off beds and out of bedroom.



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What cleaning measures are problematic?

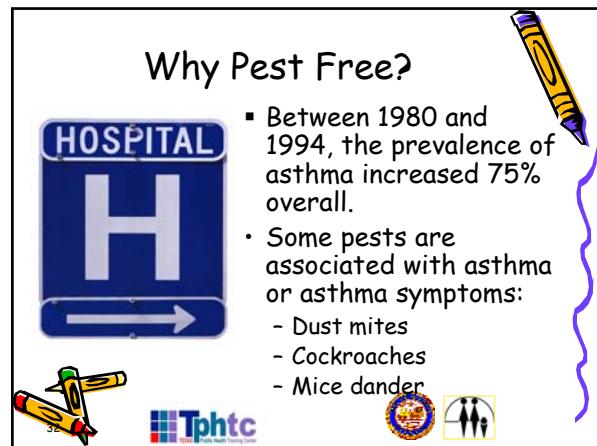
- Duct cleaning
- Carpet cleaning
- Overuse of anti-microbials
- Sanitizers
- Air fresheners



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More Pesticide Information



- The method that we use to treat such pests may create human health hazards.
- 75% of US households have used at least one pesticide indoors during the last year.
- Measurable levels of up to 12 pesticides have been found in the air inside US homes.

Up to 80% of human exposure to pesticides in the US occurs indoors.

Why Pesticide Free?

Health effects associated with pesticides include:

- Eye, nose, throat irritation
- Skin rashes, stomach cramps, nausea
- Central nervous system damage
- Kidney damage
- Increased risk of cancers



Use of some pesticides associated with increased risk of childhood leukemia

Illegal and Risky Pesticides

- Pesticides that look like candy
- Insecticide chalk (aka Miraculous or Chinese chalk)
- "Tres Pasitos"



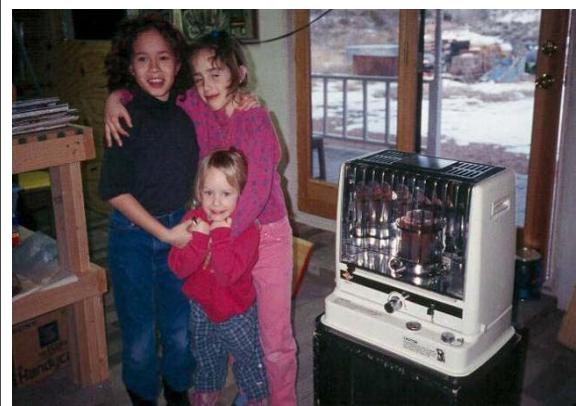
   

Integrated Pest Management (IPM)

- **Keep them out and give them no place to hide**
 - Change surrounding landscape
 - Block pest entries, passages, hiding places
- **Reduce food availability**
 - Practice proper food storage and disposal
 - No dirty dishes in the sink overnight
 - Clean crumbs, grease etc.
- **Knock down population**
 - Traps
 - Appropriate pesticides



KEEP IT VENTILATED



Sources of Combustion Contaminants

- Oven as heater
- Spillage from furnace, water heater, fireplace
- Ventless heater or fireplace
- Car exhaust from attached garage



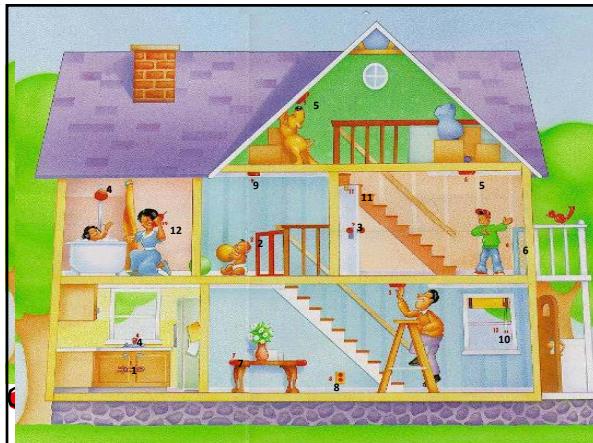
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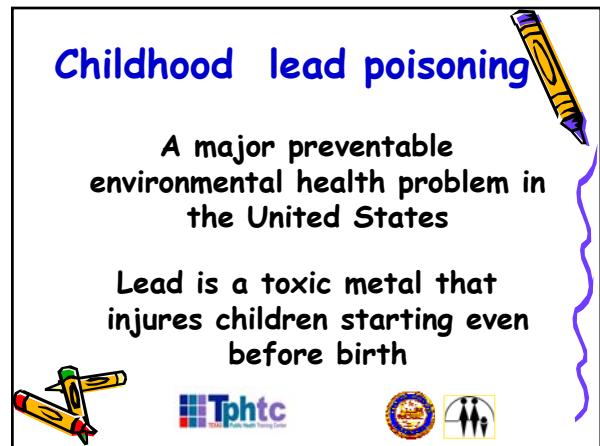


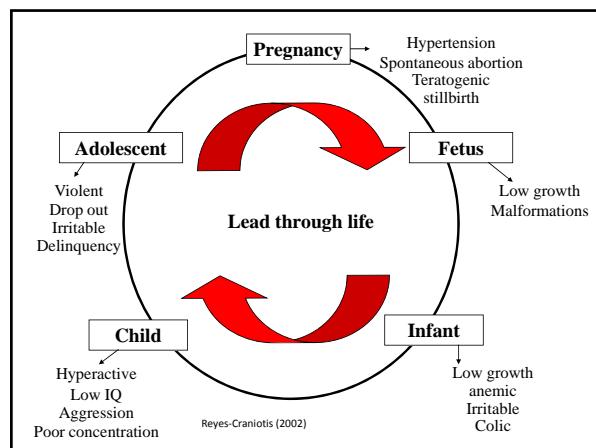
Things that need exhaust ventilation

- Bathrooms
- Clothes dryers
- Kitchen ranges
- Boilers, furnaces, hot water heaters
- Fireplaces, wood burning stoves









Lead Disclosure

- At property transfer, provide buyer/renter:
 - Lead warning statement
 - Summary of information on lead hazards (yes, no, don't know)
 - Documents on specific information about lead-based paint and lead hazards.
 - Tenant signature
- Rentals
 - Common Area results must be disclosed to all tenants.
 - At lease signing
 - Applies to oral leases.
 - Federal courses teach:



Available Testing

- Paint chip
- Dust - Clearance testing
 - 40 micrograms of lead per square foot on floors
 - 250 micrograms of lead per square foot on window sills.
- Bare soil
 - 400 ppm in play areas
 - 1200 ppm in other areas
- Drinking water



Asbestos

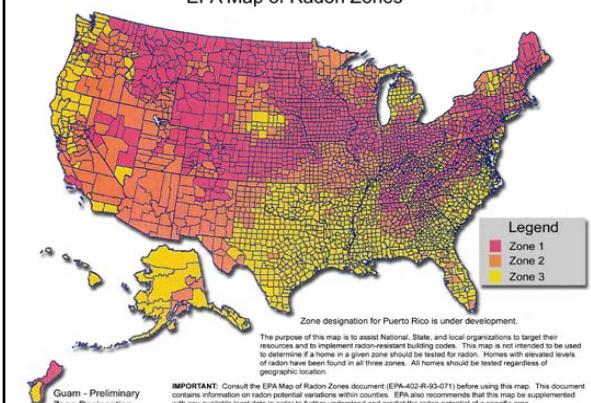


Radon - A Serious Health Concern

- Radon is a naturally occurring gas produced by the breakdown of uranium and radium in ground.
- Radon
 - 2nd leading cause of lung cancer after smoking with more than 20,000 deaths annually
 - Leading cause of lung cancer in nonsmokers and people who have never smoked.



EPA Map of Radon Zones



Volatile Organic Compounds

- Environmental Tobacco Smoke
- Paints
- Cleaning chemicals
- Carpets
- Pressed wood furniture
- Air fresheners
- Vinyl floors



Why Avoid ETS?

Contains over 4,000 substances including more than 50 compounds known to cause cancer.



Health effects include:

- In non smoking adults: lung cancer, heart disease.
- In children: asthma, sudden infant death syndrome, bronchitis, pneumonia, ear infections.



Non-smokers exposed to ETS have increase risk of acute & chronic disease



- Responsible for 150,000 to 300,000 lower respiratory tract infections in infants and children less than 18 months of age
- Asthma - cause and trigger
- Children affected by smoking caretaker
- 60% of US population has biological evidence of exposure to second hand smoke



Maintain the House

- Inspect
- Clean
- Lubricate
- Replace
- Repair
- Organize



On-going
Seasonally
Annually



Check list for signs of possible indoor air quality problems

- **Observe** - cleanliness, mold, mildew, dirty central air conditioner, etc.
- **Smell** - mold, mildew, or chemical smell
- **Feel** - excessive humidity, drafts, uncomfortable temperatures
- **Listen** - concern of staff regarding indoor air quality, unusual noises



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