

HEALTHY HOMES

IMPROVING HEALTH, CHANGING LIVES

Presented by:

Group14 Engineering

“The connection between health and the dwelling of the population is one of the most important that exists.”

– Florence Nightingale

SOME OF THE FACTS

- Over 6million families are **living in unhealthy housing**.
- In 2008, **7.8 percent** of the U.S population (23.3 million Americans) suffered from asthma, including 7.0 million children.
- Asthma is the third-ranking cause for **children to miss school**.
- There are 20,000 cases of Carbon Monoxide **poisoning** per year.
- The presence of dampness and mold in our homes increases **respiratory health problems** by 35-52%.
- Poor housing conditions, such as cleanliness inside the building (physical condition of the interior, and condition of furnishings) are associated with **increased odds of diabetes**.
- Residential **fires claim a life every 3 hours** and are the 3rd leading cause of home fatal injury

HEALTH-RELATED HOUSING QUALITY ISSUES

Table 9. Prevalence of Health-Related Housing Quality Issues (n=370)

Health-Related Housing Quality Issue	%
Pests	31.9
Fire	35.7
Mold	34.9
Appliances	54.6
Accessibility	24.1
Plumbing	48.6
Tripping	16.8
Air Quality	15.4
Ground Fault Circuit Interrupter (GFCI)	14.9

Source: 2007-2011 physical inspections from HUD, LIHTC, and RD communities

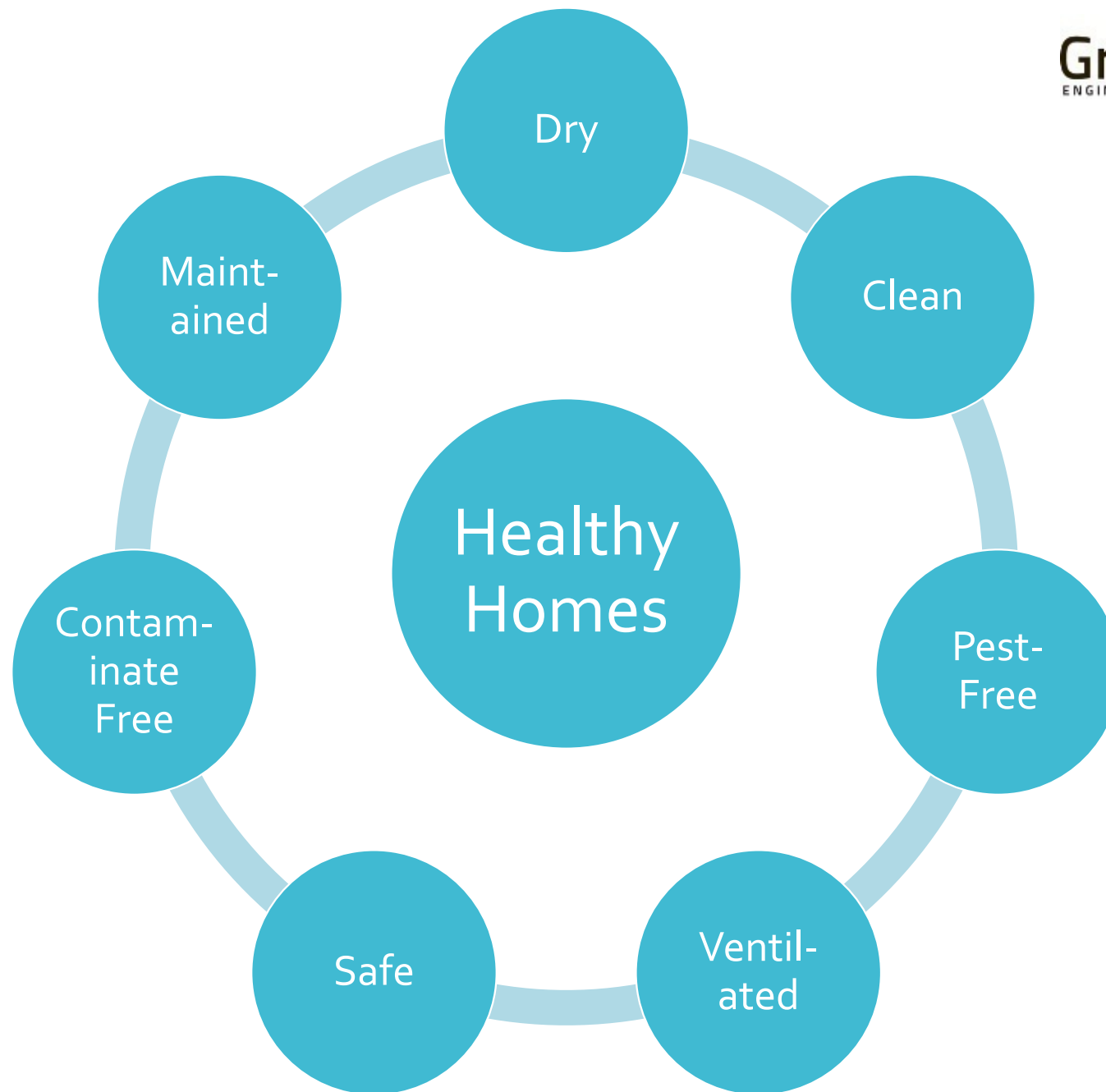
WHAT HEALTHY HOUSING CAN DO...

- Reduce elevated blood lead levels
- Decrease asthma prevalence
- Improve school attendance rates
- Reduce energy costs for families/management
- Increase durability of equipment, appliances, and furnishings
- Reduce healthcare costs for society
- Diminish racial & economic health disparities
- Safer housing/neighborhood stabilization
- Reduce the risk of fire deaths and fire injuries
- Improved mental health
- Improved tenant awareness on connection between health and housing
- Improved educational outcomes for youth

... and much, much more.

7 PRINCIPLES TO A HEALTHY HOME

- National Center for
Healthy Housing



CO-BENEFITS OF WEATHERIZATION AND HEALTH INTERVENTIONS

- Consolidates program interventions, staffing, and paperwork
- Creates a more effective and efficient process for addressing and remediating issues
- Reduces the burden on the tenants - # of times need to be in the home
- Increases resident motivation to take part in efficient behaviors when it's tied to their own health and well-being
- Identifies housing and physical assessments needs that often go unreported (such as mold, leaks and pests)

WHAT WE LOOKED AT IN THE AUDIT

- Exhaust & Air Flow
- Mold & Moisture
- Fire and CO Monitors
- Trip Hazards
- Presence of pests
- Formaldehyde
- VOCs
- Mercury
- Radon
- Lead
- Asbestos



PROJECT 1 AUDIT OUTCOMES

Existing Conditions	Indicator	Health Measure
Bathroom Exhaust Fans are Low Flow	100% under code minimum (50cfm)	Install Energy Star Exhaust Fans
Ventilation / Air Quality	Corridor and common area ventilation inadequate	Replace MAUs
Radon detected	1 of 4 testing locations over 4pCi/L limit	Perform a long-term radon test to more effectively identify radon levels in the building
Inoperable / outdated smoke alarms	50% outdated, broken or unused	Replace the smoke alarms in all units
Safety signage missing for units w/ oxygen tanks	72% of units with oxygen tanks had no signage	Install safety signage for those homes that contain oxygen tanks
Signs of smoking in units	15% of units had signs of smoking (no smoking building)	Provide education on the importance of environmental tobacco smoke and reinforce lease with residents
Mold present in the units	62% of units had mold	Remediate presence and source (when applicable) of mold
Mercury containing bulbs	100% of units	Replace all bulbs with LED lighting
Damaged screens and soffit	35% of units had broken or non-existent screens and building soffit damaged	Fix / Replace damaged window screens and soffit

PROJECT 2 AUDIT OUTCOMES

Existing Conditions	Indicator	Health Measure
Poor Ventilation	Corridor and stairwell exhaust non-functional and/or inadequate	Fix the rooftop and stairwell exhaust fans, repair exhaust grills, and rebalance.
Inoperable / outdated smoke alarms	25% of units had inoperable or missing detectors	Replace the smoke alarms in all applicable units
Bathroom Exhaust Fans are Low Flow	100% inadequate flow and 58% either had no flow or too low to detect.	Fix the rooftop and stairwell exhaust fans, repair exhaust grills, and rebalance.
Anti-scald mixing valves	65% of units had hot water temperatures over 120°F limit.	Installing an anti-scald mixing valve will protect against burns and the higher tank temperature will ward against legionella.
Safety signage missing for units w/ oxygen tanks	100% units with oxygen did not have signage – most of which had signs of smoking too	Install safety signage for those homes that contain oxygen tanks
Signs of smoking in units	50% of units had signs of smoking	Provide education on the importance of environmental tobacco smoke and provide on-site designated smoking area
Mold present in the units / Moisture levels	65% signs of mold and 60% high moisture levels	Remediate presence and source (when applicable) of mold; Hire industry professional to perform whole building inspection
Mercury containing bulbs	100% of units contained mercury	Replace all bulbs with LED lighting
Presence of pests	Pest issues found throughout the building (cockroaches, bed bugs, ladybugs)	Institute IPM policy and fix ventilation system

PROJECT 1 SURVEY OUTCOMES

- **60% participated in the survey**
- In general, **residents reported being quite comfortable and content** with their living environment. 80% felt their temperature and air flow in their home was good; those that were dissatisfied felt their units got too hot while others felt that the bathrooms were too cold.
- Alternatives sources of heating and cooling were minimal, **16% of homes stated that they have either used space heaters in the bathrooms and/or used their ovens to heat their homes**. Proper education on how to stay comfortable and safe in the winter months would be beneficial.
- **Very few residents reported health concerns commonly related to indoor environmental quality (13%). Of those that did report concerns, 75% were smokers.**

PROJECT 2 SURVEY OUTCOMES

- Of the sample units audited, **85% participated in the survey.**
- In general, residents reported **average comfort with their living environment.** 64% felt their temperature and air flow in their home was good; those that were dissatisfied felt their units got too hot in both the summer and winter months while corner units complained of cold drafts.
- Alternatives sources of heating and cooling were minimal, **15% of homes stated that they have either used space heaters or they use the a/c in the winter time or are opening windows.**
- **Pests in the building are a major point of concern.** Most residents reported having issues with pests currently or in the past. Residents also reported using harmful pesticides as a way of dealing with the pests.
- Some **residents reported health concerns as a result of allergens and allergies.** They expressed that this issue was coming directly from **environmental tobacco smoke.**

EXHAUST AND AIR FLOW



EXHAUST AND AIR FLOW

Proper ventilation can reduce hazards of:

- Volatile Organic Compounds (VOCs)
- Environmental Tobacco Smoke
- Allergens
- Mold
- Carbon Monoxide
- Formaldehyde
- Radon

HEALTH IMPACTS:
CO Poisoning
Eye, nose, and throat
irritation
Shortness of breath
Allergies
Asthma
Respirator Diseases

MOLD AND MOISTURE

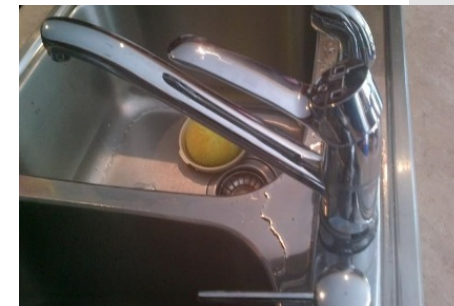


MOLD and MOISTURE

Proper moisture control reduces hazards of:

- Wasted water / \$ (leaks)
- Extensive damage to property
- Mold damage

HEALTH IMPACTS:
Respiratory Disease
Coughing and Wheezing
Attract Pests
Asthma





FIRE AND BURNS



FIRE AND BURNS

Proper fire and burn control, reduces the hazards of:

- Burns from fire
- Burns for hot water
- Fatal smoke inihilation
- Fires starting from kitchen ranges (the number one cause of house fires)
- Exposure of oxygen tanks to flames



HEALTH IMPACTS:
Scalding / Burns
Smoke Poisoning
Death

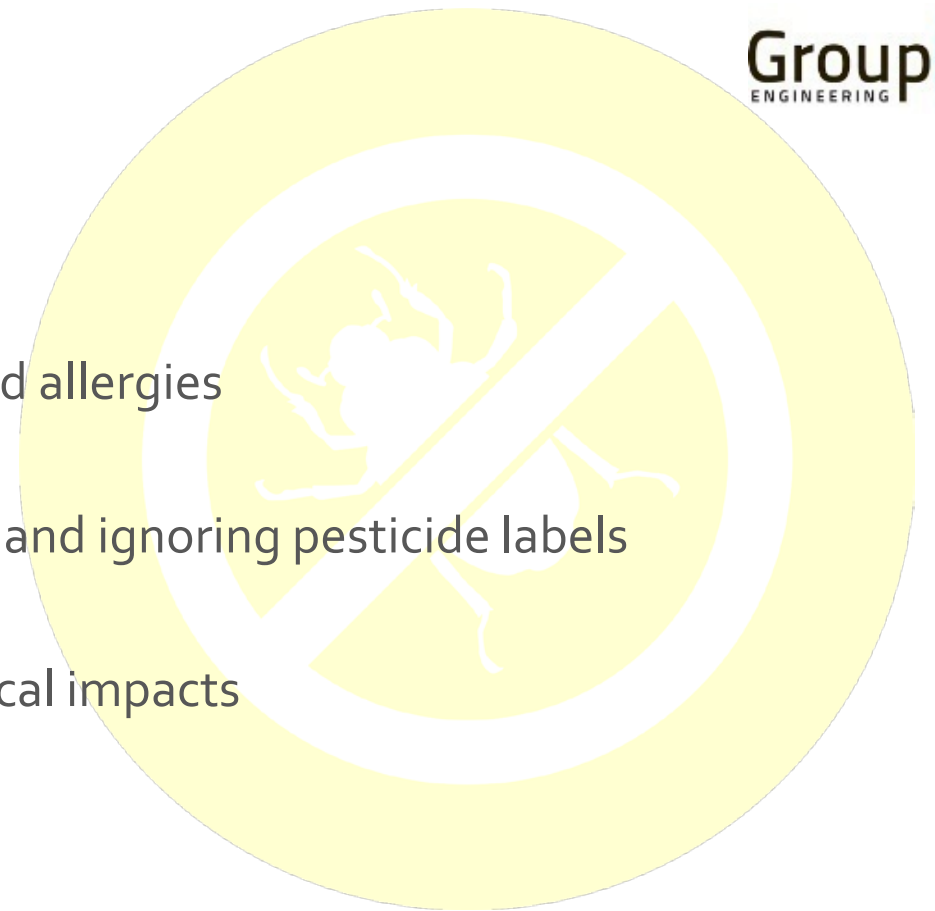
PEST MANAGE- MENT



THE PROBLEM WITH PESTS...

Proper pest control:

- Reduces triggers for asthma and allergies
- Reduces contaminated food
- Minimizes people overreacting and ignoring pesticide labels
- Lowers transmission of disease
- Decreases negative psychological impacts
- Coordinates responsibilities
- Minimizes exposures to toxins
- Provides longer lasting control
- Reduces complaints
- Is holistic



EDUCATION: STAFF

- Proper ventilation control
- Proper fire and safety management
- Integrated pest management
- Green cleaning policies and guidelines
- HUD and code allowances
- How to improve their housing and reduce complaints
- Schedule for preventative maintenance

- How to educate their residents
- What residents are doing in their home

EDUCATION: RESIDENTS

- Use a **good housekeeping** routine – clean the corners and vents in your home regularly
- **Check cupboards** often for pests, leaks and mold
- Do NOT bring in **used furniture** and bedding (especially mattresses)
- Get your **pets treated** for fleas and other pests
- **Report leaks** (plumbing, roof, and toilets) as soon as possible – small problems can become big one's quick
- **Use your bathroom and kitchen fans**
- If you smoke, **smoke outside** at least 20ft away from home
- Do not dismantle **CO or Fire Monitors**
- Use LED **bulbs** whenever possible and Dispose of CFLs properly to avoid mercury poisoning



QUESTIONS / COMMENTS

