

WEATHERIZATION SUMMARY

Weatherization Training –
An Innovative Pathway to
Apprenticeship Programs

4/27/2012

GCOHC

WEATHERIZATION SUMMARY

- Greater Cincinnati Occupational Health Center (GCOHC) had 245 workers complete the training.
 - Partnership with Cincinnati Energy Alliance
- Receiving college credits from Cincinnati State College.
- 15% entered pre-apprenticeship program
 - Community Construction Career Readiness Collaboration (3CRC)
- 6 submitted applications for Building Trades apprenticeship programs and were placed
- 2 students entered Cincinnati State working towards an associates degree.

WEATHERIZATION SUMMARY

Participant Information:

Ages - 18 -54 mean age of participant was 35

Gender – Female 20% Male 80%

Race – Asian 3%, Black 81%, & White 16%

Prior Health & Safety Training 45%

*GCOHS: summary report

4/27/2012

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WEATHERIZATION SUMMARY

- Perceptions of the Program



WEATHERIZATION SUMMARY

How confident are you that you can...?	I CANNOT do this	Not at all confident	Somewhat confident	Pretty confident	Very confident
Describe one hazard that might occur at a worksite.	1 (1%)	0	17 (10%)	44 (26%)	106 (63%)
Describe a resource to find health and safety information.	1 (1%)	1 (1%)	19 (11%)	52 (30%)	97 (57%)
List two ways to prevent hazardous material from getting into your body.	1 (1%)	2 (1%)	7 (4%)	40 (24%)	119 (70%)

*GCOHS: summary report

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WEATHERIZATION SUMMARY

Activities Checklist	YES	NO
Did you...?		
Look at one or more fact sheets	170 (99%)	1 (1%)
Discuss a fact sheet checklist	166 (97%)	6 (3%)
Identify safe & unsafe work practices	167 (98%)	4 (2%)
Inspect respirators & CPC	109 (64%)	62 (36%)
Practice N-95 don/doff	56 (33%)	115 (67%)
Practice PPE don/doff	62 (37%)	108 (63%)
Discuss unexpected situations	150 (89%)	18 (11%)

* GCOHS: summary report

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WEATHERIZATION SUMMARY

Trainees' Perceptions of Course Content	Strongly disagree	Disagree	Agree	Strongly agree
The content of training today was very interesting.	0	2 (1%)	56 (33%)	111 (66%)
Training will be very useful to me on my job.	0	2 (1%)	55 (33%)	111 (66%)
It was very important for me to learn what was presented today.	0	0	55 (33%)	114 (67%)
Training made a lot of sense to me.	0	0	55 (33%)	114 (67%)
I will definitely apply what I learned today.	0	1 (1%)	54 (32%)	114 (67%)
I learned a lot of good things today.	0	1 (1%)	44 (26%)	124 (73%)

WEATHERIZATION SUMMARY

Trainee Open-Ended Comments (Verbatim)

I am more informed stakeholder with knowledge about work environment, will be safe/handle emergency situations.

Nothing needs to change, class was very informational and helpful

There was a lot we did not cover, but as to be expected in a 4 hour course. He was good about being clear that more training was required.

A lot of information to absorb in a few hours. Very informative and I am extremely interested in furthering this.

WEATHERIZATION SUMMARY

A Quote from a Letter from Ziah Paff:

“As a young person never working in manufacturing before the weatherization notebook is a great guide for me to have.”

Honda Plant

WEATHERIZATION SUMMARY

A Quotes from a Letter from Shere Cunningham:

“I believe that if an individual would take up Weatherization class first, Pre-Apprenticeship school second, and Apprenticeship school third: they would be very successful in any career in the construction industry.”

“Weatherization and Life Skills for construction, I would call this part the job applicant you go through to get to the interview.”

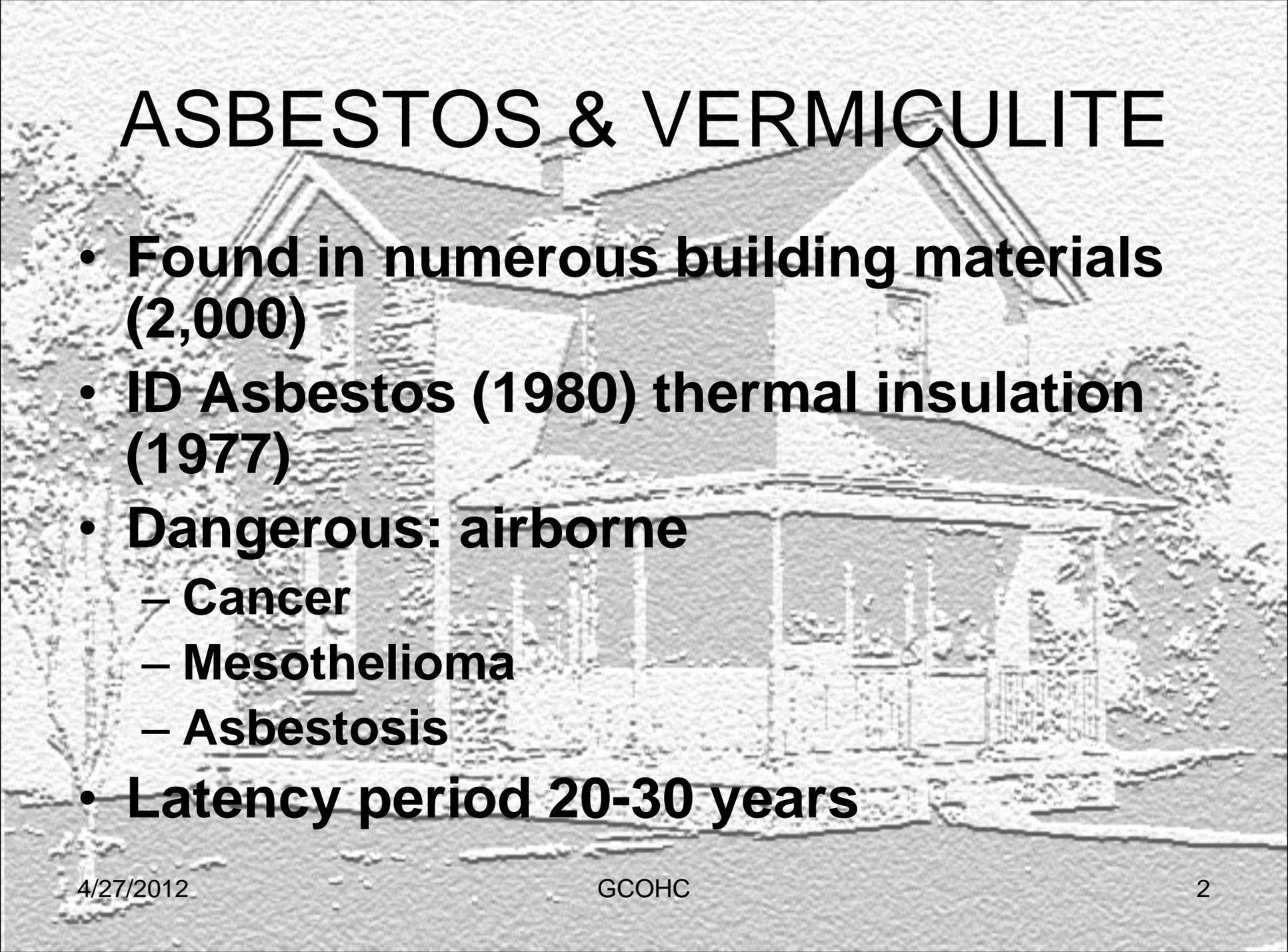
An Heat & Frost Insulator Apprentice

WEATHERIZATION



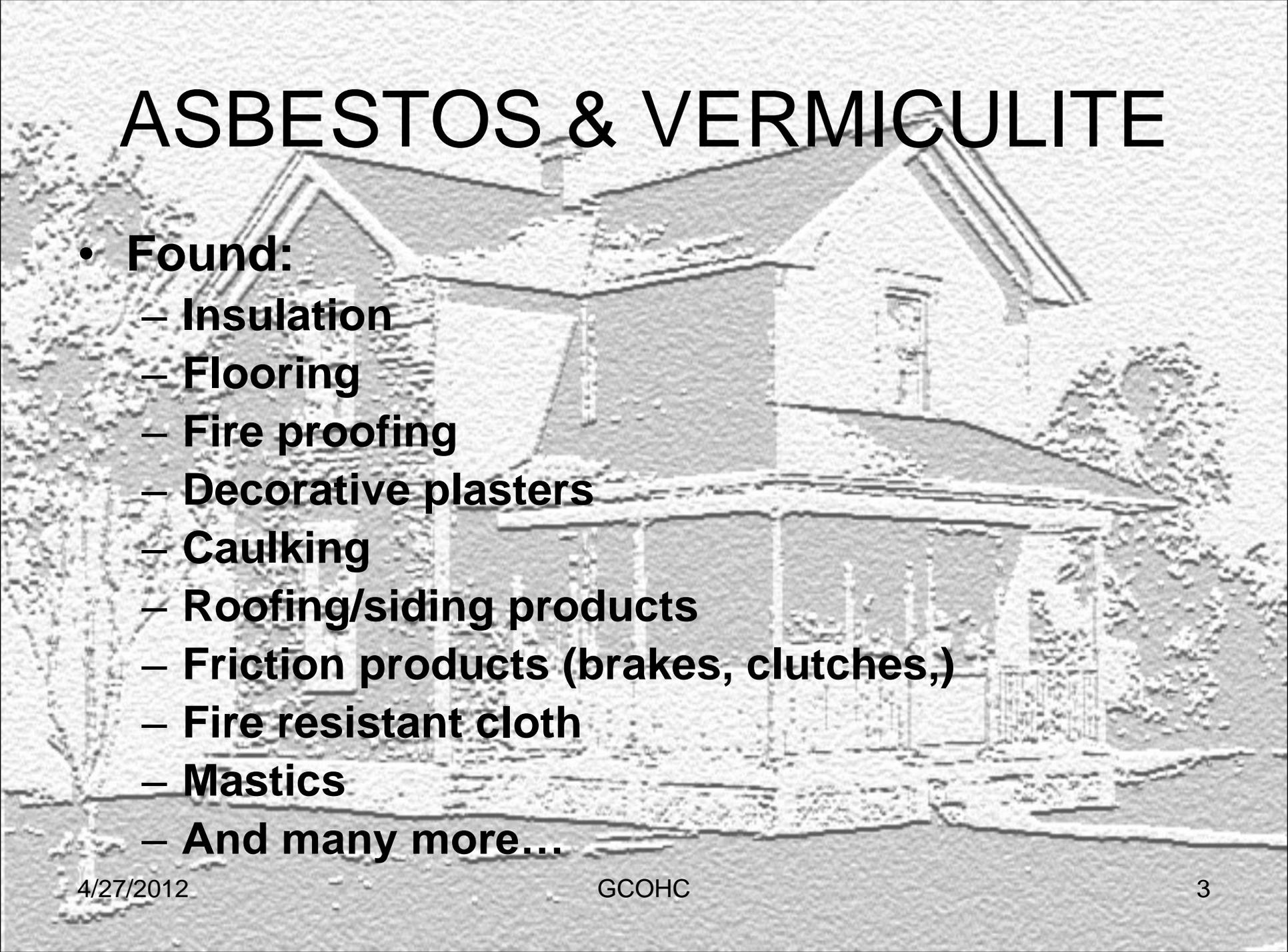
- **Awareness program**
- **Regulatory Agencies:**
 - **OSHA**
 - **EPA**
 - **State Laws**
 - **Local Laws**
- **Safety: Number ONE priority**

ASBESTOS & VERMICULITE



- **Found in numerous building materials (2,000)**
- **ID Asbestos (1980) thermal insulation (1977)**
- **Dangerous: airborne**
 - **Cancer**
 - **Mesothelioma**
 - **Asbestosis**
- **Latency period 20-30 years**

ASBESTOS & VERMICULITE



- **Found:**
 - **Insulation**
 - **Flooring**
 - **Fire proofing**
 - **Decorative plasters**
 - **Caulking**
 - **Roofing/siding products**
 - **Friction products (brakes, clutches,)**
 - **Fire resistant cloth**
 - **Mastics**
 - **And many more...**

ASBESTOS & VERMICULITE

- Homes



ASBESTOS & VERMICULITE

- **Asbestos is found through out the house**
 - **Inside**
 - **outside**



ASBESTOS & VERMICULITE



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ASBESTOS & VERMICULITE

- **Vermiculite**
 - Mines in Libby, Montana
 - 70% of all vermiculite sold in US
- **Uses:**
 - Insulation
 - Packaging
 - Fertilizer
 - Fire proofing

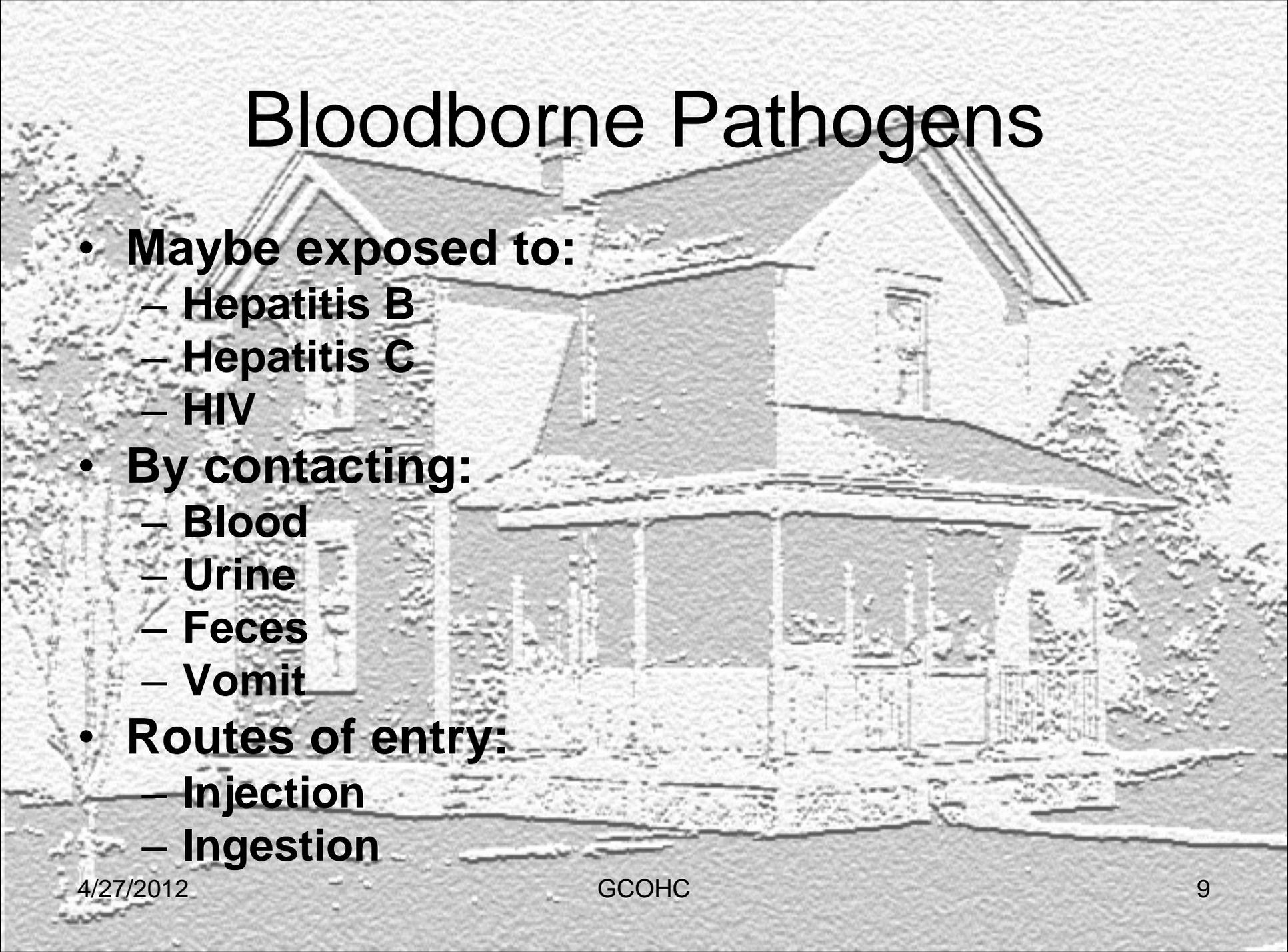


ASBESTOS & VERMICULITE

- **Protection**
 - DO NOT DISTURB
 - DO NOT DRY SWEEP
 - CONTACT A
LISENCES
CONTRACTOR
 - ASSUME IT IS
ASBESTOS
 - DON'T SMOKE
 - NO PAPER MASK



Bloodborne Pathogens



- **Maybe exposed to:**
 - Hepatitis B
 - Hepatitis C
 - HIV
- **By contacting:**
 - Blood
 - Urine
 - Feces
 - Vomit
- **Routes of entry:**
 - Injection
 - Ingestion

Bloodborne Pathogens

- **Care:**
 - **Sharp objects**
 - **Needles**
 - **Always inspect the work area for any sharp objects before you start working.**



Bloodborne Pathogens

- **Protection:**
 - Take **UNIVERSAL PRECAUTIONS**
 - **ALWAYS WEAR GLOVES**
 - Use a broom or other cleaning device
 - Thoroughly wash your hands w/warm water and soap.
 - If you think you may have been exposed get medical attention.



CHEMICALS

- **More than likely will use or come in contact while you are weatherizing.**
- **Attack specific organs**
- **Four ways chemicals enter the body are:**
 - **Inhalation**
 - **Ingestion**
 - **Skin absorption**
 - **Injection**
- **Some enter more than one way**



CHEMICALS

- **Chemical Effects**

- **Local effects (point of contact)**

- Irritation to lungs, eyes, skin, throat, & nose
 - Burning sensation in the lungs
 - Chemical skin burn

- Systemic effects**

- chemical gets into the blood and is carried through out the body to all the organs. Most serious of the effects.

CHEMICALS

- **Precautions:**
 - **Check lags**
 - **Read the MSDS**
 - **Don't move or disturb chemicals**
 - **Always wear proper PPE**
 - **Never touch your face, mouth, eyes, nose, or any other part until you wash your hands.**
 - **Chemical spills, notify supervisor, DO NOT CLEAN IT UP without the proper PPE.**



COMPRESSED AIR

- **Used for pneumatic nail guns, drill, or even to help in the clean up.**
- **Improper use could result in temporary hearing lose, foreign objects in the eye, or even impalement.**



COMPRESSED AIR

- **Protection:**
 - Never point a pneumatic tool at yourself or any one else.
 - Proper psi for the tool being used
 - Always wear safety glasses and hearing protection if needed.
 - Make sure all parts are in good working order.
 - Never use compressor to clean debris from yourself.
 - Training



CONFINED SPACES

- **Found around the work site may be:**
 - **Sewers**
 - **Septic tanks**
 - **Storages areas**
 - **Cellars/basement**
 - **HVAC systems**
 - **Crawl Spaces**
 - **Attics**

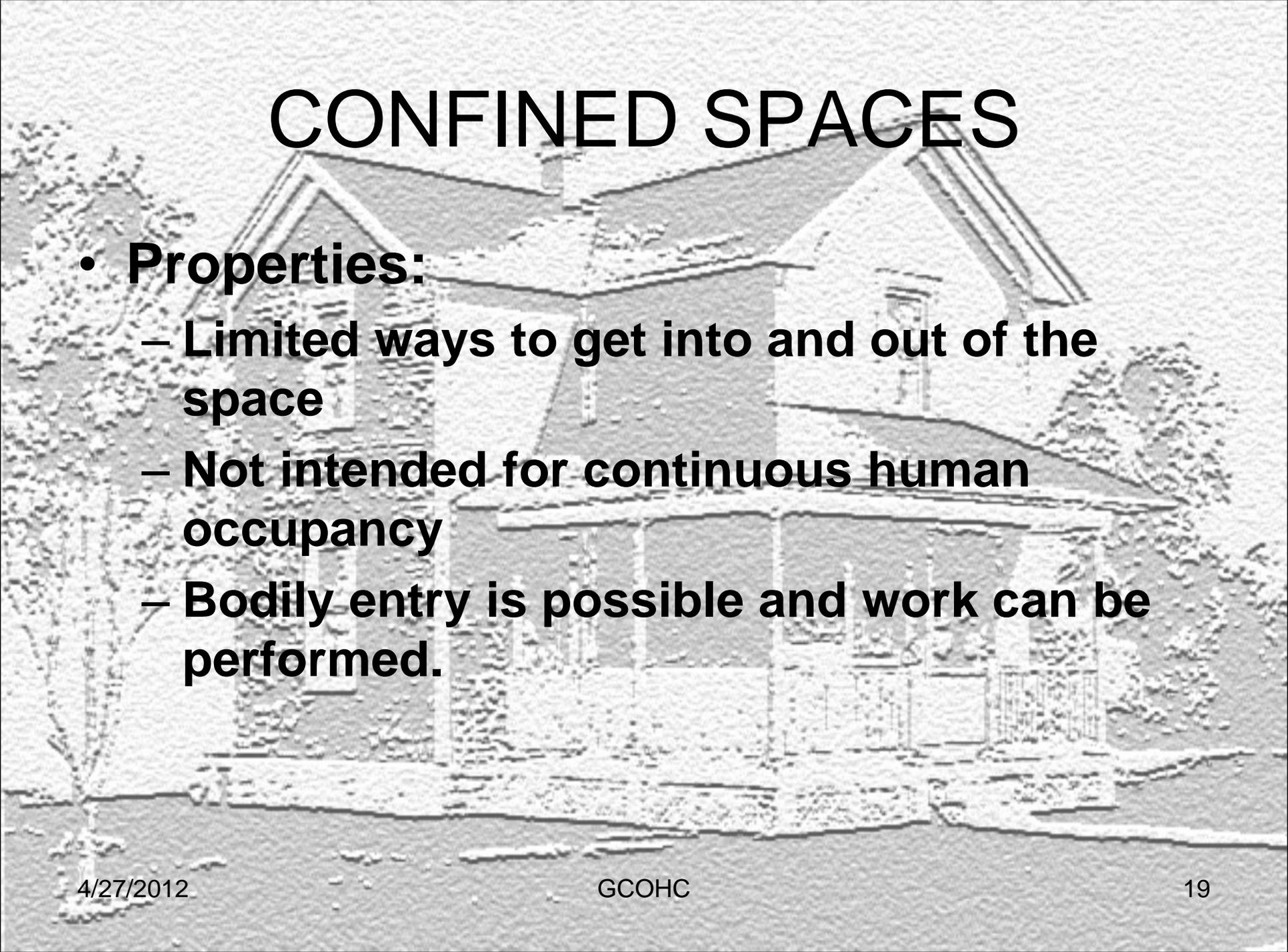


CONFINED SPACES

- **Extremely Dangerous**
 - Lack of oxygen
 - Vapor
 - Chemicals
 - Sewerage
 - Toxic fumes
 - Flammable materials
 - Hydrogen sulfide gas
 - Engulfment
 - Explosions or Fires



CONFINED SPACES



- **Properties:**

- Limited ways to get into and out of the space
- Not intended for continuous human occupancy
- Bodily entry is possible and work can be performed.

CONFINED SPACES



- **Protection:**
 - Prevent unauthorized entry
 - ID/evaluate hazards
 - Training
 - Attendant
 - Proper PPE
 - Rescue Plan

ELECTRICAL SAFETY

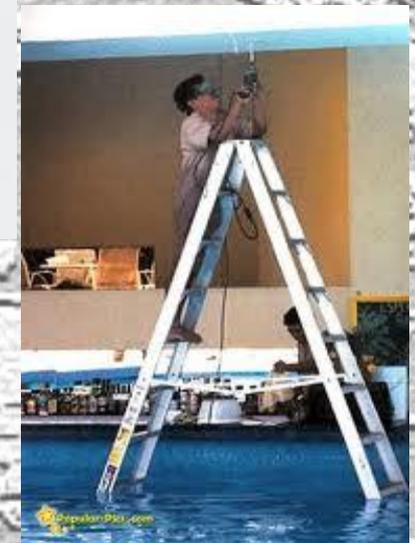
- **ELECTROCUTION, ELECTRICAL BURNS, OR DEATH MAY OCCUR FROM THE IMPROPER USE OF ELECTRICAL EQUIPMENT.**



ELECTRICAL SAFETY

- **Protection**

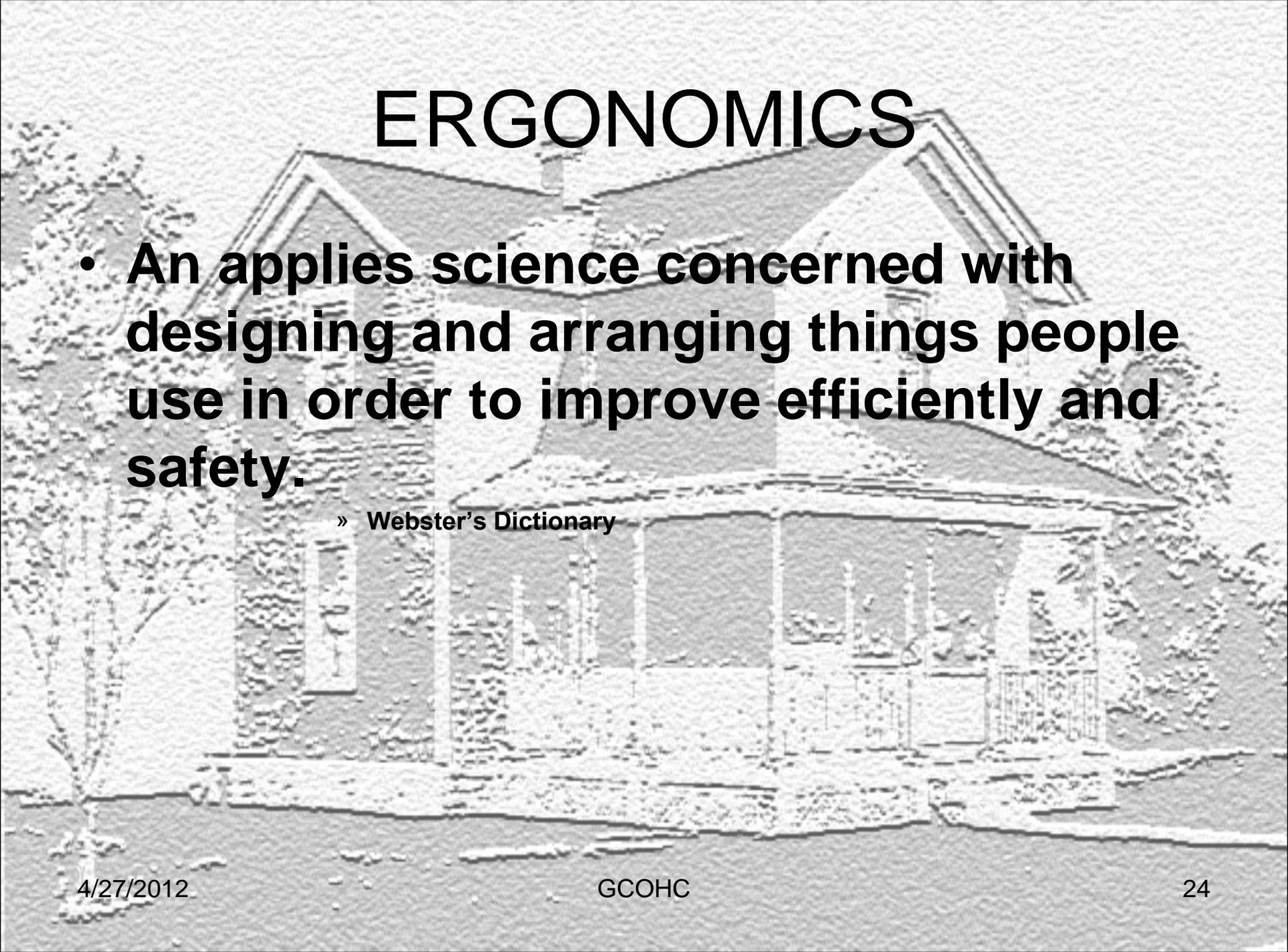
- Assume outlets and any electric device is **HOT!**
- Use **GFCI**
- Inspect cords & equipment before use
- Don't use electrical tools in water or when wet.
- Training



ELECTRICAL SAFETY



ERGONOMICS



- **An applied science concerned with designing and arranging things people use in order to improve efficiency and safety.**

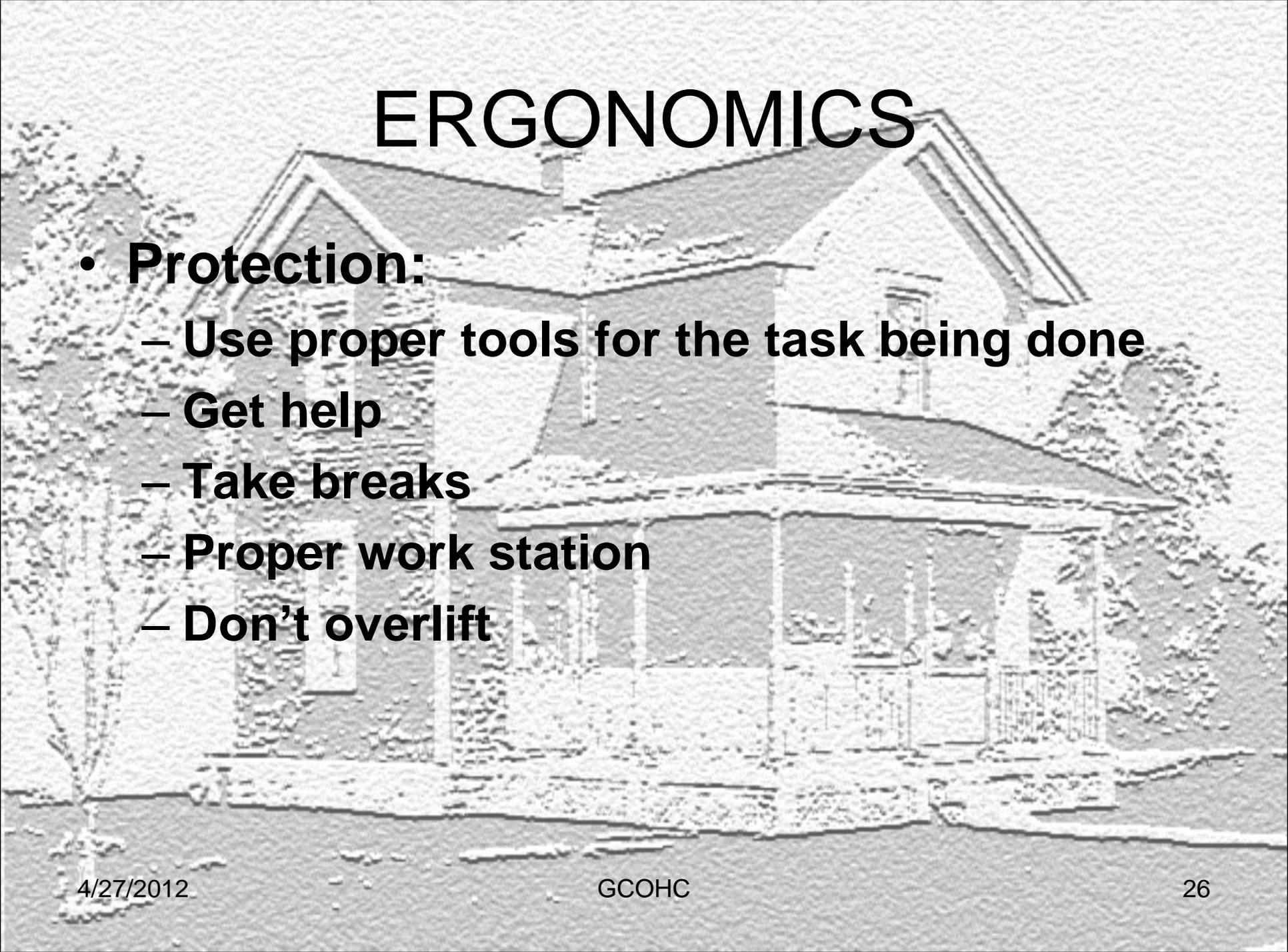
» Webster's Dictionary

ERGONOMICS

- Repetitive motion
- Bad Posture
- Awkward Position
- Injuries
 - Strains
 - Sprains
 - Bruises
 - Carpal Tunnel
 - Bad Backs



ERGONOMICS



- **Protection:**
 - Use proper tools for the task being done
 - Get help
 - Take breaks
 - Proper work station
 - Don't overlift

FIRE PREVENTION

- **Three Elements of a fire:**

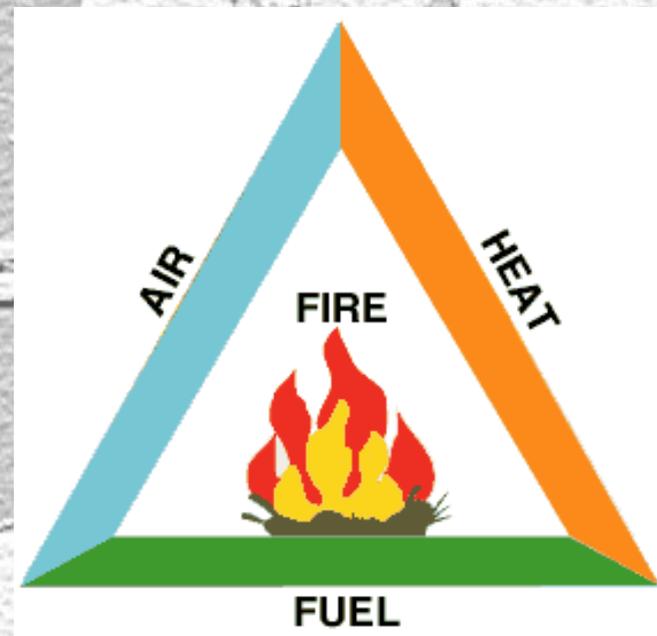
- **Fuel**

- Cleaners
- Gas
- Solvents

- **Oxygen**

- **Heat**

- Flame
- Spark



FIRE PREVENTION

- **Protection**
 - Always pay attention
 - Fire extinguishers
 - Training
 - PASS
 - Conduct routine fire drills
 - Handle & store combustibles properly
 - Observe NO-Smoking rules



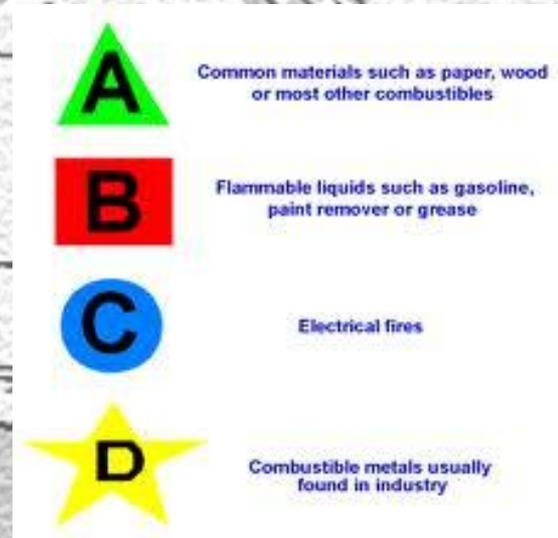
FIRE PREVENTION

- **FIRE EXTINGUISHERS**

- **PASS**

- **PULL**
- **AIM**
- **SQUEEZE**
- **SWEEP**

- **TYPES OF EXTINGUISHERS**

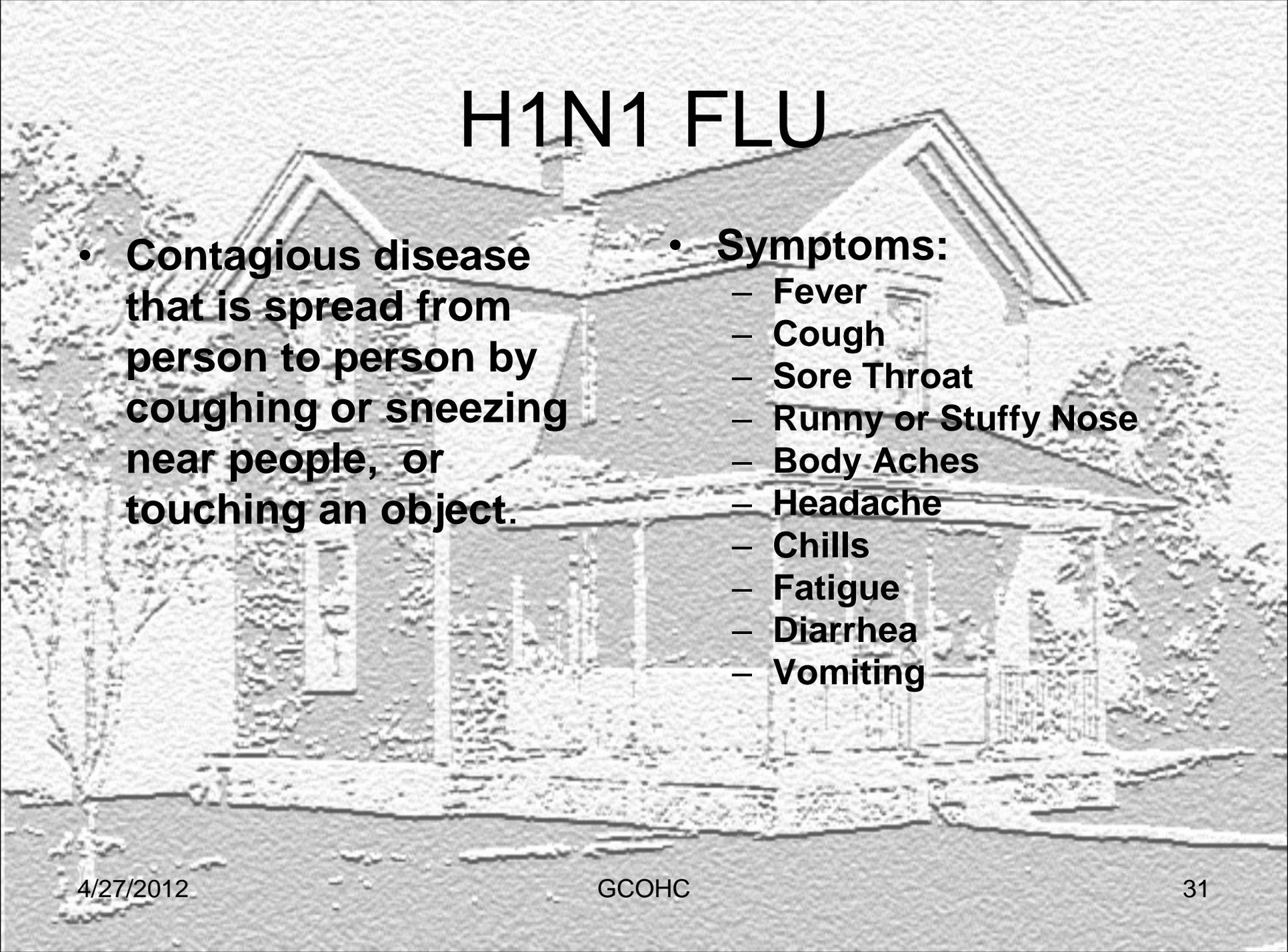


Formaldehyde

- **Found in glues**
 - Particle board
 - Plywood
 - Fiberboard
- **Symptoms:**
 - Tearing of eyes
 - Difficulty breathing
 - Burning of nose and throat
 - Coughing
- **Protection**
 - Use exterior grade products
 - Air conditioning and humidifiers
 - Lower temperatures



H1N1 FLU



- **Contagious disease that is spread from person to person by coughing or sneezing near people, or touching an object.**

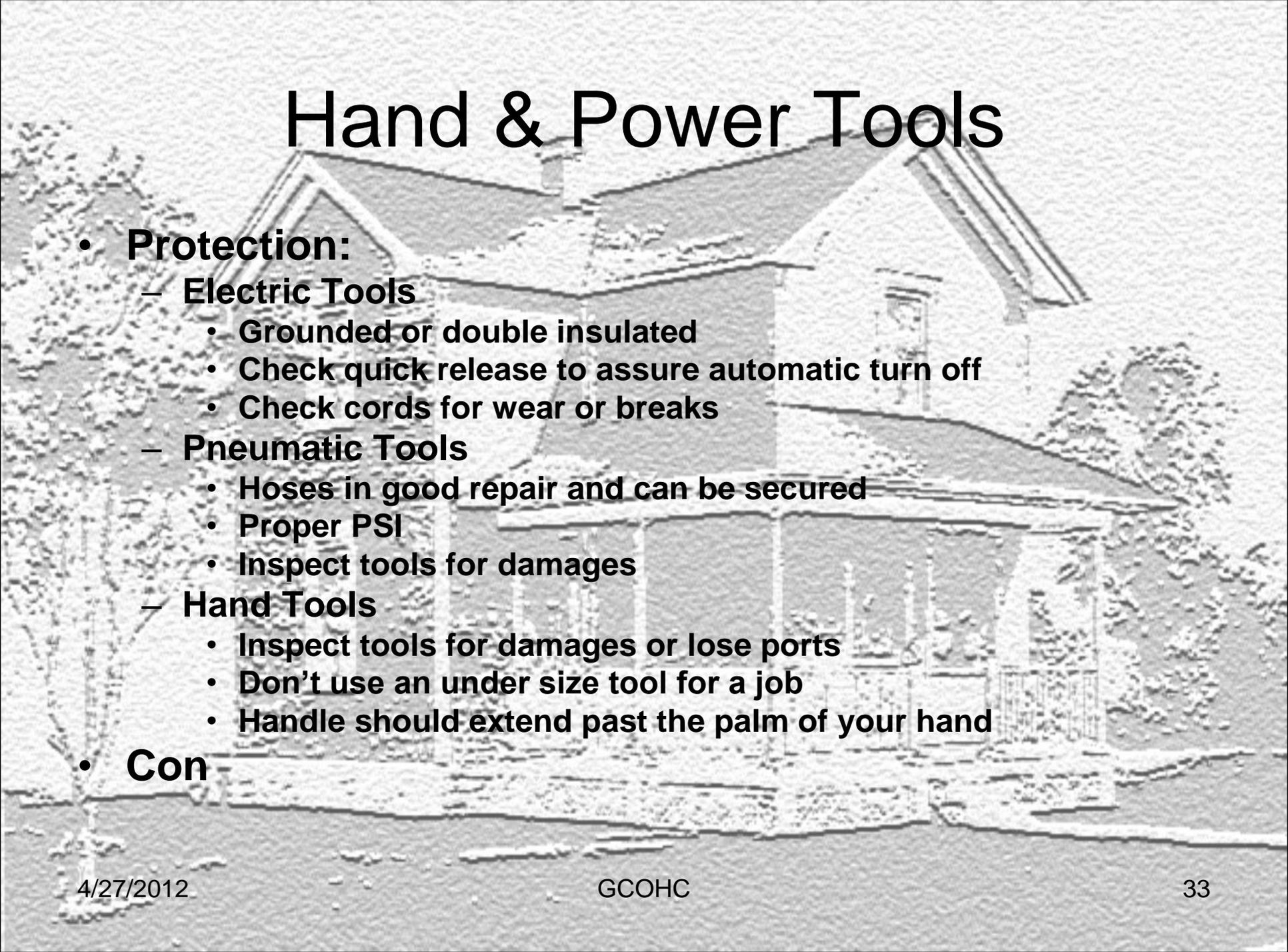
- **Symptoms:**

- **Fever**
- **Cough**
- **Sore Throat**
- **Runny or Stuffy Nose**
- **Body Aches**
- **Headache**
- **Chills**
- **Fatigue**
- **Diarrhea**
- **Vomiting**

Hand & Power Tools

- **Tools of all kind may be used during weatherization to perform many tasks.**
- **Improper use of tools may lead to electrocution, miss-fire, sudden start/stops of tools, amputations, cuts, and bruises.**
- **NEVER USE A TOOL FOR A JOB IT WASN'T INTENDED TO BE USED FOR!!**

Hand & Power Tools



- **Protection:**
 - **Electric Tools**
 - Grounded or double insulated
 - Check quick release to assure automatic turn off
 - Check cords for wear or breaks
 - **Pneumatic Tools**
 - Hoses in good repair and can be secured
 - Proper PSI
 - Inspect tools for damages
 - **Hand Tools**
 - Inspect tools for damages or lose parts
 - Don't use an under size tool for a job
 - Handle should extend past the palm of your hand
- **Con**

Hand & Power Tools

- **Machine Guards & Attachments**
 - Always use proper PPE (shields, safety glasses, gloves, etc.)
 - Never remove a guard for any reason
- **Training**



HEAT & COLD STRESS

Heat stress is common on job sites.

- **Heat Exhaustion:**

- Weakness, fatigue, dizziness, pale, cool, moist skin, heavy sweating, headache, nausea, and fainting
- Treatment- should rest in a cool place, give water if conscious (non-alcoholic). If unconscious call 911, no liquids.

- **Prevention:**

- Wear loose and breathable clothes, cotton
- Take frequent breaks, short breaks in shade w/plenty of water.
- Get acclimated to the heat
- Do the most physical tasks in the coolest part of the day.

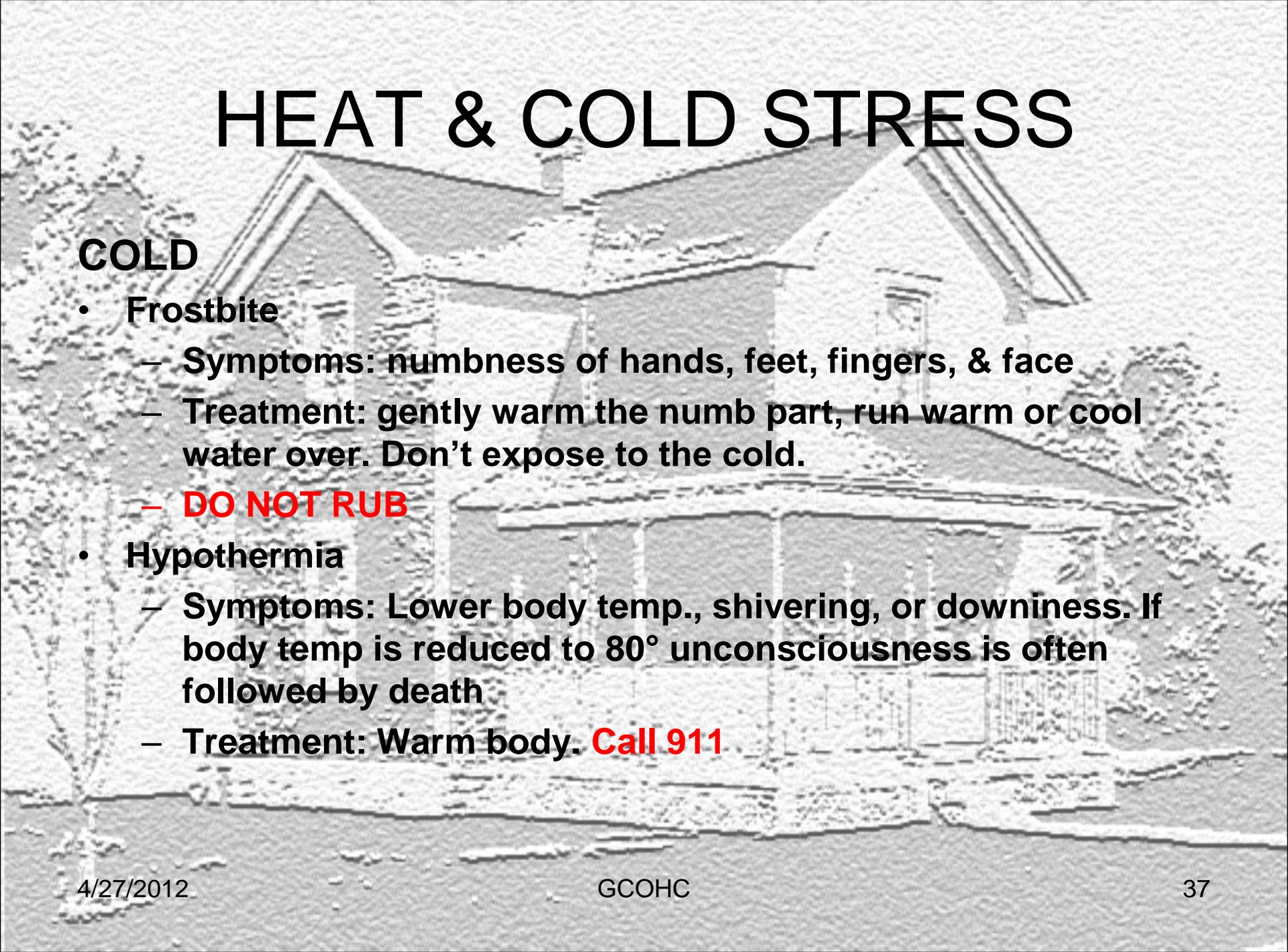
HEAT & COLD STRESS

Heat Stroke

- A medical emergency
- Very dry skin, hot skin with red appearance, confusion, unconsciousness, rapidly rising temperature
- Can be fatal
- Treatment is call 911, move person to a cool area, remove PPE, use wet towels or water and fan to cool.



HEAT & COLD STRESS

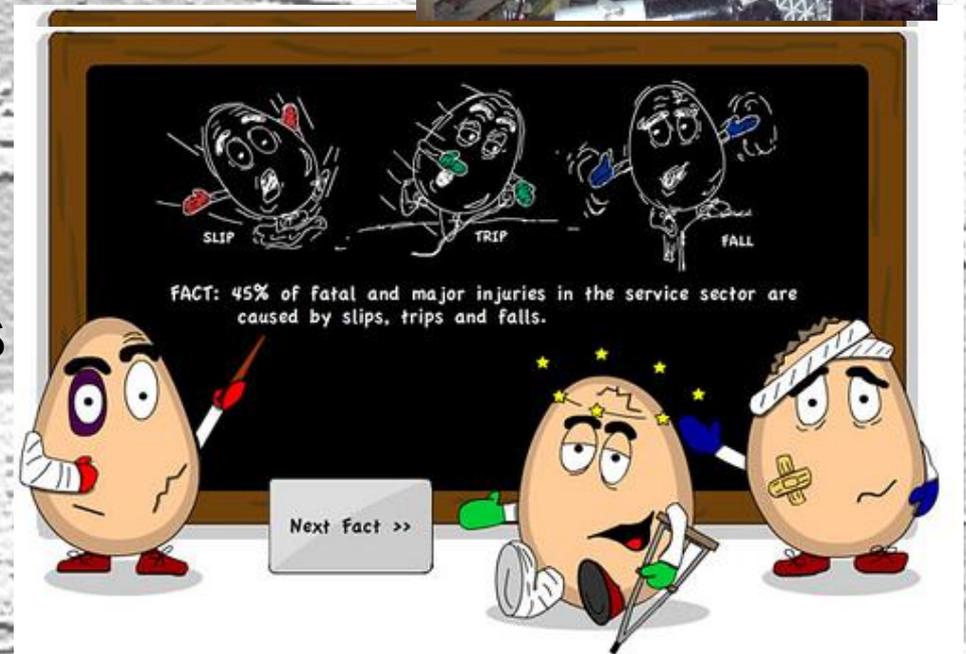


COLD

- **Frostbite**
 - **Symptoms:** numbness of hands, feet, fingers, & face
 - **Treatment:** gently warm the numb part, run warm or cool water over. Don't expose to the cold.
 - **DO NOT RUB**
- **Hypothermia**
 - **Symptoms:** Lower body temp., shivering, or downiness. If body temp is reduced to 80° unconsciousness is often followed by death
 - **Treatment:** Warm body. **Call 911**

HOUSEKEEPING

- By keeping the work area clear & clean of debris the chances for accidents are greatly reduced.
- Injuries such as slips, trips, and falls are usually caused by have materials in the way.



HOUSEKEEPING

**A CLEAN
WORK AREA
IS A
SAFE
WORK AREA**

- **Protection**
 - Always inspect your work area (**walk your space**)
 - Remove debris or anything that is a possible tripping hazard
 - Tape down any cords that are stretched across walkways
 - Clean up after yourself as you work
 - Clean up spills immediately (if not a chemical)
 - Store materials, equipment, tools, and chemicals in a proper and safe manner.

ILLUMINATION

- **Important to have proper lighting**
- **Inspect the lighting before use**
 - **Could cause fires, electrocutions, and shocks**
- **Lack of lighting could cause slips, trips and falls**



ISOCYANATES

- **Spray-on foam used for insulation in weatherization**
- **Irritate eyes, nose, and throat along with the respiratory system**
- **Exposure can sensitize workers**
- **Protection:**
 - **Goggles**
 - **Head/face covering**
 - **Tyvek® suit (covers entire body)**
 - **Read MSDS**



LADDERS & SCAFFOLDING

- **Common of weatherization projects**
 - Installing insulation, removing leaves from gutters, painting, or just general work up high.
- **Improper use can lead to falls**



LADDERS & SCAFFOLDING

- **Protection:**
 - **Inspect ladders/scaffolding**
 - **Use proper ladder for job**
 - **No boxes, barrels, or other unstable bases to add more height.**
 - **DO NOT STAND ON TOP TWO STEPS**
 - **No metal ladders near electric lines**
 - **Extend extension ladder 3 feet above the level to be reached**
 - **Tie off extension ladders to keep from slipping**
 - **Use a 3-point climb**
 - **Never lean outside the rails of a ladder**
 - **Never lean an A-frame ladder and make sure the spacer bar is locked**
 - **Make sure the rungs are clean**

LADDERS & SCAFFOLDING

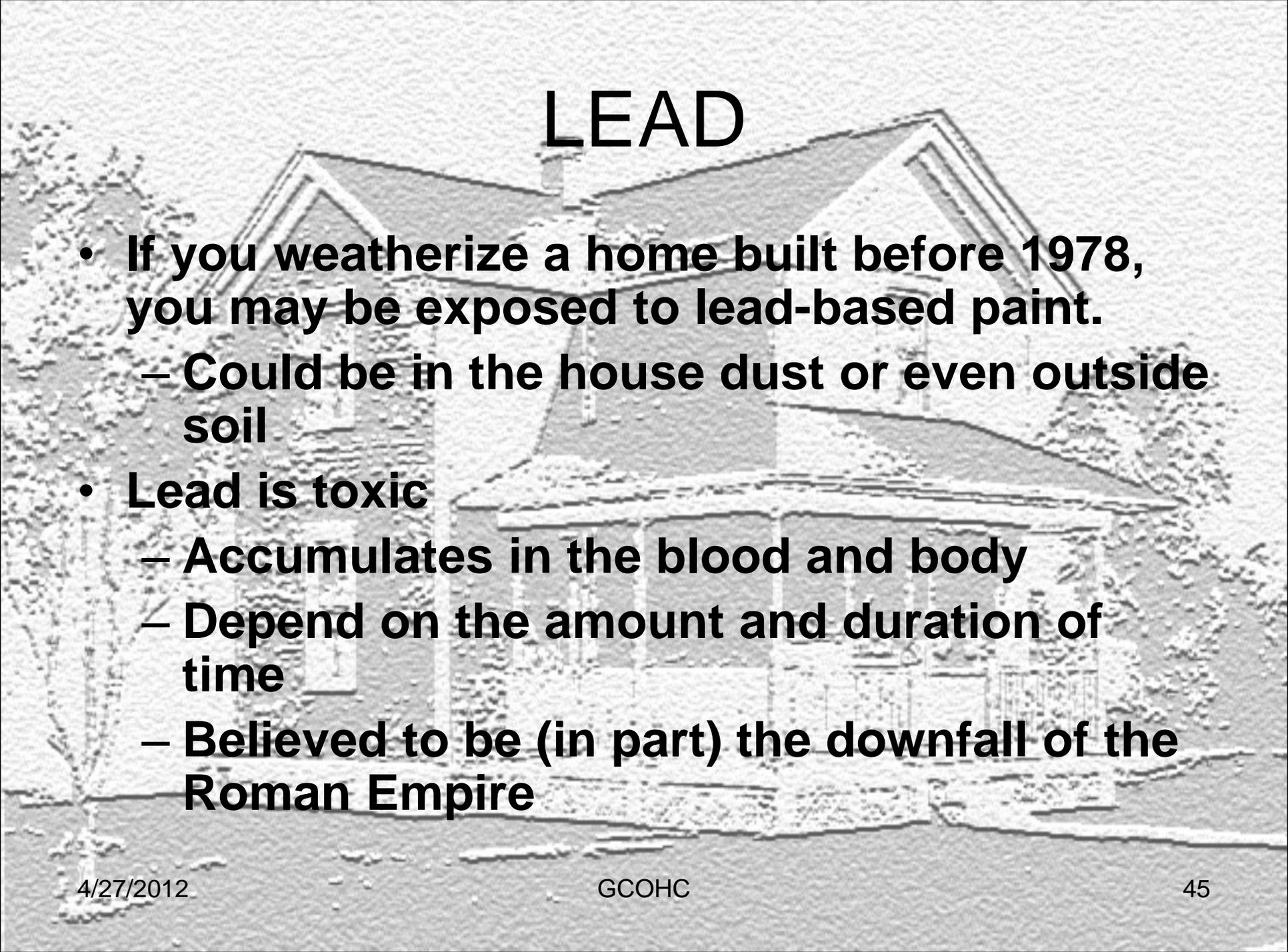


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LEAD



- **If you weatherize a home built before 1978, you may be exposed to lead-based paint.**
 - **Could be in the house dust or even outside soil**
- **Lead is toxic**
 - **Accumulates in the blood and body**
 - **Depend on the amount and duration of time**
 - **Believed to be (in part) the downfall of the Roman Empire**

LEAD

- **Symptoms:**
 - Loss of appetite
 - Nausea
 - Vomiting
 - Stomach cramps
 - Constipation
 - Fatigue
 - Headache
 - Joint or muscle aches
- **Long term**
 - Nerve disorder
 - Memory & concentration problems
 - Hypertension
 - Reproductive problems
 - Damage to urinary system



LEAD

Protection:

- **Inspect for lead based paint in a home before 1978 – window sills, walls, baseboards, and etc.**
- **Good housing keeping practices**
- **Minimize disturbing house dust**
- **Vacuum with HEPA filter only**
- **If scraping, wet before**
- **Always wash hands thoroughly with soap before eating, smoking or touching your face.**
- **Use proper PPE**
- **Training**



LOCK-OUT TAG-OUT

- Safely de-energize power sources such as electrical, steam/water, mechanical equipment, and keep the systems from being energized before the work is done.
- **NEVER ASSUME A MACHINE, PIPE, OR ELECTRICAL UNIT IS LOCKED OUT JUST BECAUSE IT SHOULD BE. WHEN IN DOUBT, LOCK IT OUT!**

LOCK-OUT TAG-OUT

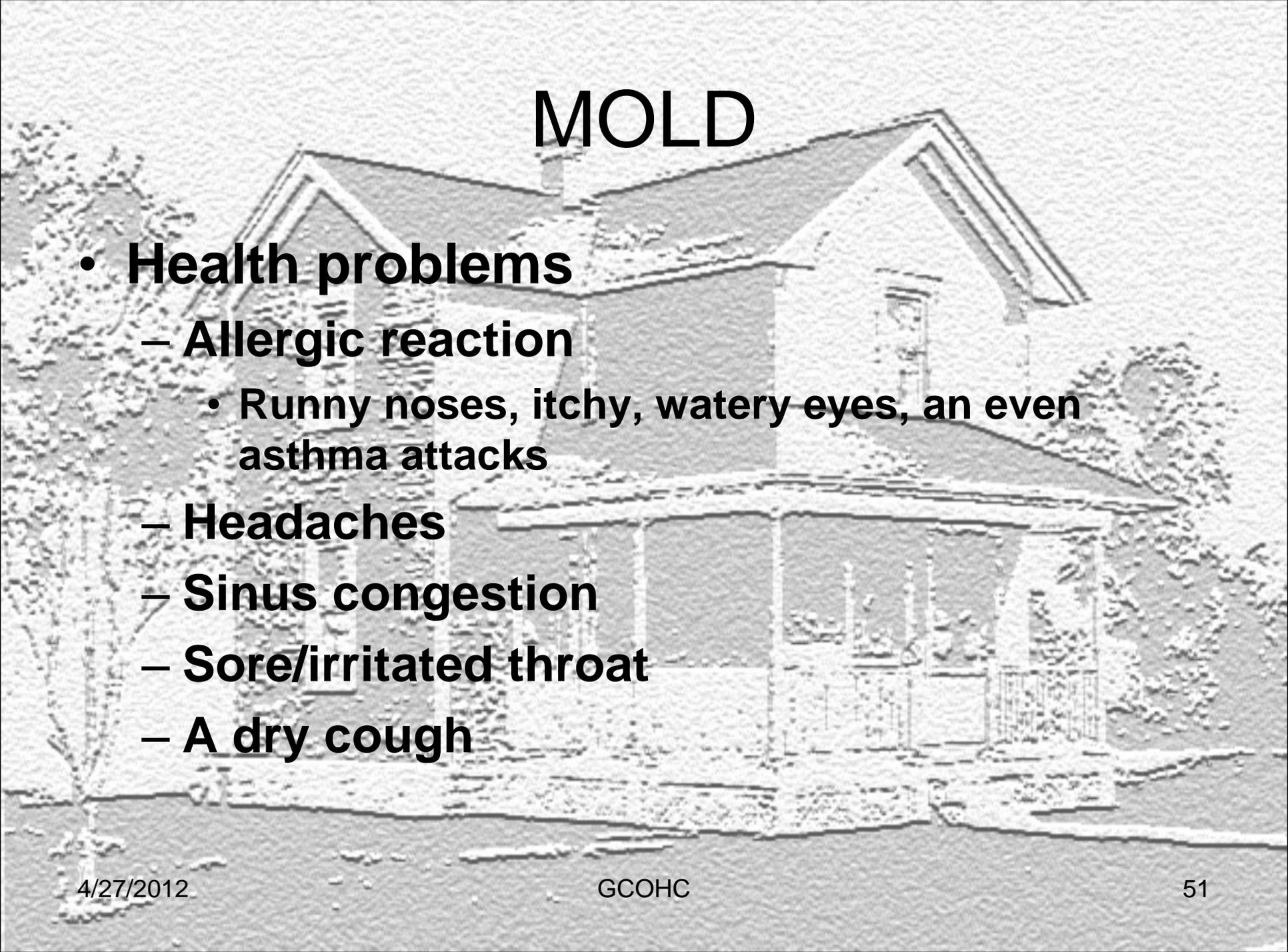
- **Protection:**
 - Training
 - Each person to work on a system is to place a lock/tag, after verification is done that it is shut off.
 - After finished work on system remove only your lock/tag



MOLD

- **A surface growth of fungus on damp or decaying matter**
- **Mold can be found anywhere.**
- **Grows on paper, wood, insulation, drywall, under porches, behind furniture or carpet.**
- **Needs three things to survive:**
 - **Organic matter to grow on**
 - **Oxygen**
 - **Water**

MOLD



- **Health problems**
 - **Allergic reaction**
 - **Runny noses, itchy, watery eyes, an even asthma attacks**
 - **Headaches**
 - **Sinus congestion**
 - **Sore/irritated throat**
 - **A dry cough**

MOLD

- **Protection:**
 - Don't disturb
 - Use proper PPE
 - Respirator
 - Suit
 - Gloves
 - Eye protection
 - Hygiene
 - Training



MOTOR VEHICLES

- **Cars, pick-ups, forklifts and even backhoes/small dozers may be used on a weatherization job.**
- **Only qualified and licensed operators may use the vehicles.**



MOTOR VEHICLES

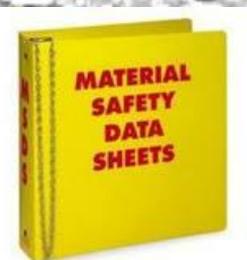
- **Protection**

- **Inspect vehicle before use**
 - **Use a check list**
- **Use seat belts if supplied**
- **Check work area before starting to operate vehicle**
- **Use bright colored vest if working around equipment**
- **Always lower forks/blade before shutting down motor**
- **Step off equipment, don't jump down**
- **Training**



MSDS

- **Material Safety Data Sheet**
- **Always read before using chemicals, cleaning agents, or building supplies.**
- **There are different sections.**
- **Part of the Hazardous Communications – The Right to Know Law**



MSDS-Section I

Product & Company ID

- **PRODUCT NAME:**
SYNONYMS:
PRODUCT CODES:
- **MANUFACTURER:**
DIVISION:
ADDRESS:
- **EMERGENCY PHONE:**
CHEMTREC PHONE:
OTHER CALLS:
FAX PHONE:
- **CHEMICAL NAME:**
CHEMICAL FAMILY:
CHEMICAL FORMULA:
- **PRODUCT USE:**
PREPARED BY:
- **SECTION 1 NOTES:**

MSDS-Section II

- **SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS**

- **INGREDIENT:**

CAS NO.	% WT	% VOL	SARA 313
REPORTABLE		ppm	mg/m³

- **OSHA PEL-TWA:**
OSHA PEL STEL :
OSHA PEL CEILING:

- **ACGIH TLV-TWA:**
ACGIH TLV STEL:
ACGIH TLV CEILING:

- **SECTION 2 NOTES:**

MSDS-Section III

Physical & Chemical Properties

- **APPEARANCE:**
- **ODOR:**
- **PHYSICAL STATE:**
- **pH AS SUPPLIED:**
- **pH (Other):**
- **BOILING POINT:**
(165°) °F
- **MELTING POINT:**
- **FREEZING POINT:**
- **VAPOR PRESSURE (mmHg):**
@
- **VAPOR DENSITY (AIR = 1):**
@
- **SPECIFIC GRAVITY (H2O = 1):**
@
- **EVAPORATION RATE:**
- **BASIS (=1):**
- **SOLUBILITY IN WATER:**
- **PERCENT SOLIDS BY WEIGHT:**
- **PERCENT VOLATILE:**
BY WT/
BY VOL @
- **VOLATILE ORGANIC COMPOUNDS (VOC):**
WITH
WATER: LBS/GAL
WITHOUT
WATER: LBS/GAL
- **MOLECULAR WEIGHT:**
- **VISCOSITY:**
@

SECTION 9 NOTES:

MSDS-Section IV

Fire-Fighting Measures

- **FLAMMABLE LIMITS IN AIR, UPPER:**
(% BY VOLUME) **LOWER:**
- **FLASH POINT:**
 - **F:**
 - **C:**
- **METHOD USED:**
- **AUTOIGNITION TEMPERATURE:**
 - **F:**
 - **C:**
- **NFPA HAZARD CLASSIFICATION**
HEALTH: **FLAMMABILITY:** **REACTIVITY:**
OTHER:
- **HMIS HAZARD CLASSIFICATION**
HEALTH: **FLAMMABILITY:** **REACTIVITY:**
PROTECTION:
- **EXTINGUISHING MEDIA:**
- **SPECIAL FIRE FIGHTING PROCEDURES:**
- **UNUSUAL FIRE AND EXPLOSION HAZARDS:**
- **HAZARDOUS DECOMPOSITION PRODUCTS:**
- **SECTION 5 NOTES:**

MSDS-Section V

Hazard Identification

- **EMERGENCY OVERVIEW:**
- **ROUTES OF ENTRY:**
- **POTENTIAL HEALTH EFFECTS**
- **EYES:**
- **SKIN:**
- **INGESTION:**
- **INHALATION:**
- **ACUTE HEALTH HAZARDS:**
- **CHRONIC HEALTH HAZARDS:**
- **MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:**
- **CARCINOGENICITY**
- **OSHA: ACGIH: NTP: IARC:**
- **OTHER:**
- **SECTION 3 NOTES:**
- **CON**

MSDS-Section V Hazard ID (con)

- **FIRST AID MEASURES**
- **EYES:**
- **SKIN:**
- **INGESTION:**
- **INHALATION:**
- **NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:**

MSDS-Section VI

Reactivity Data

- **STABLE UNSTABLE**
- **STABILITY:**
- **CONDITIONS TO AVOID (STABILITY):**
- **INCOMPATIBILITY (MATERIAL TO AVOID):**
- **HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:**
- **HAZARDOUS POLYMERIZATION:**
- **CONDITIONS TO AVOID (POLYMERIZATION):**
- **SECTION 10 NOTES:**



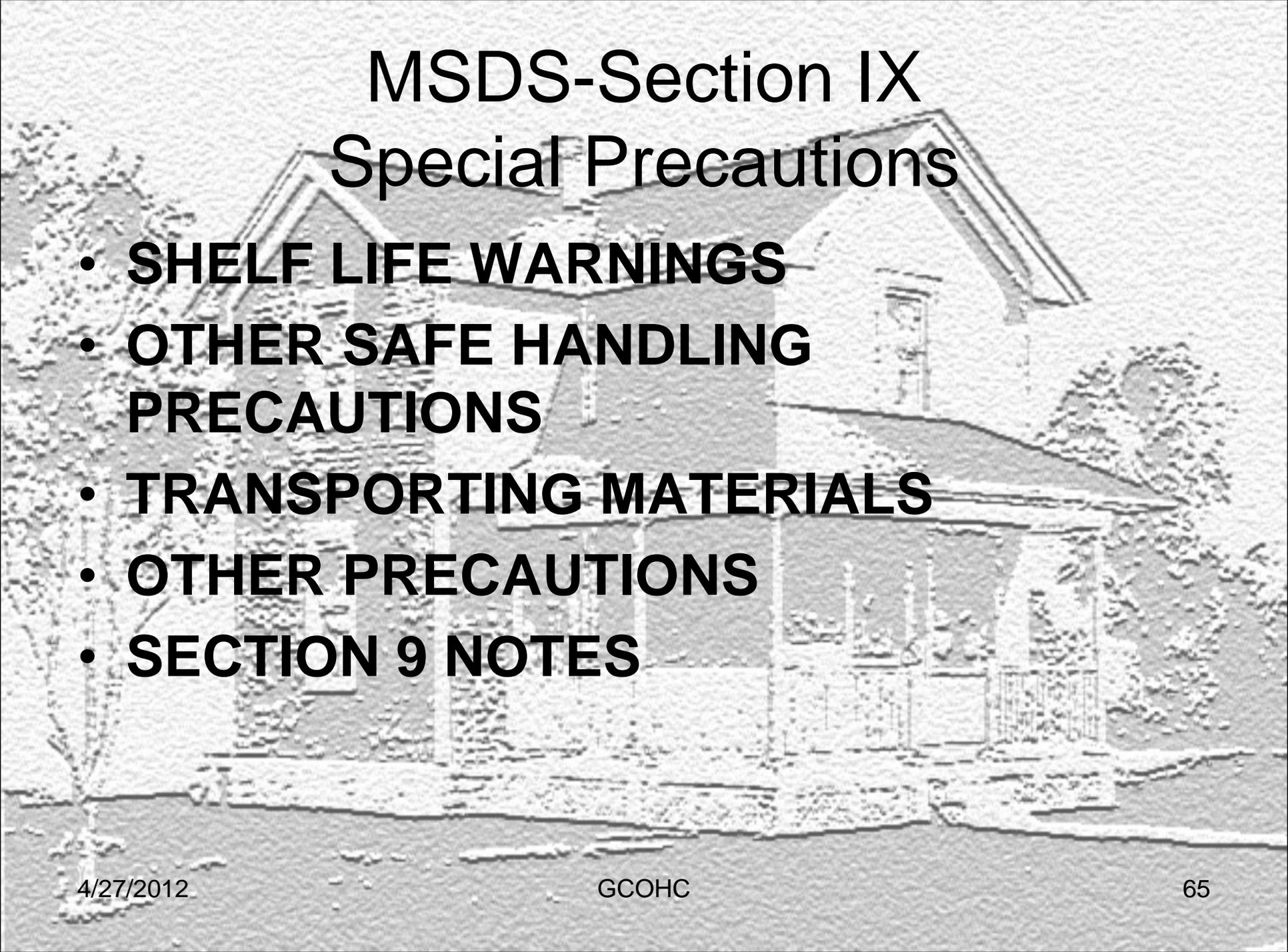
MSDS-Section VII Safe Handling & Use

- **HANDLING AND STORAGE:**
- **STEPS TAKEN IN CASE OF SPILL OR MATERIAL RELEASE:**
- **WASTE DISPOSAL METHODS:**
- **OTHER PRECAUTIONS:**
- **SECTION 7 NOTES:**

MSDS-Section VIII

Control Measures

- **ENGINEERING CONTROLS:**
- **VENTILATION :**
- **RESPIRATORY PROTECTION:**
- **EYE PROTECTION:**
- **SKIN PROTECTION:**
- **OTHER PROTECTIVE CLOTHING OR EQUIPMENT:**
- **WORK HYGIENIC PRACTICES:**
- **EXPOSURE GUIDELINES:**
- **SECTION 8 NOTES:**



MSDS-Section IX Special Precautions

- **SHELF LIFE WARNINGS**
- **OTHER SAFE HANDLING PRECAUTIONS**
- **TRANSPORTING MATERIALS**
- **OTHER PRECAUTIONS**
- **SECTION 9 NOTES**

PCB's

- **Are a mixture of chlorinated compounds.**
- **A carcinogen**
- **Found in homes before 1978, in electrical transformers and capacitors, also could be found in caulking & sealing materials.**
- **May be exposed when inhaling or ingesting dust contaminated with PCB's**
- **Protection:**
 - **Determine if the building was built before 1978**
 - **Don't generate any dust while removing caulking or sealants.**
 - **Before removing caulking wet it**
 - **Wear safety glasses and gloves**
 - **Wash hands before eating, smoking, drinking, or touching your face.**

WORK SITE PEST

- Any weatherization job you may encounter biting/sting insects, snakes, rodents, and other nuisance animals.
- Some individuals are allergic. May need immediate medical attention



WORK SITE PESTS

- **Protection:**
 - Always be aware of your work area, don't just reach in, **LOOK!**
 - All pets are secured
 - Wear long pants, socks, heavy boot, leather gloves, and long sleeve work shirt
 - Some are allergic to stings, check to see if they have an EpiPen
 - Snake bites keep person calm and the bite below heart.



PORTABLE GENERATORS

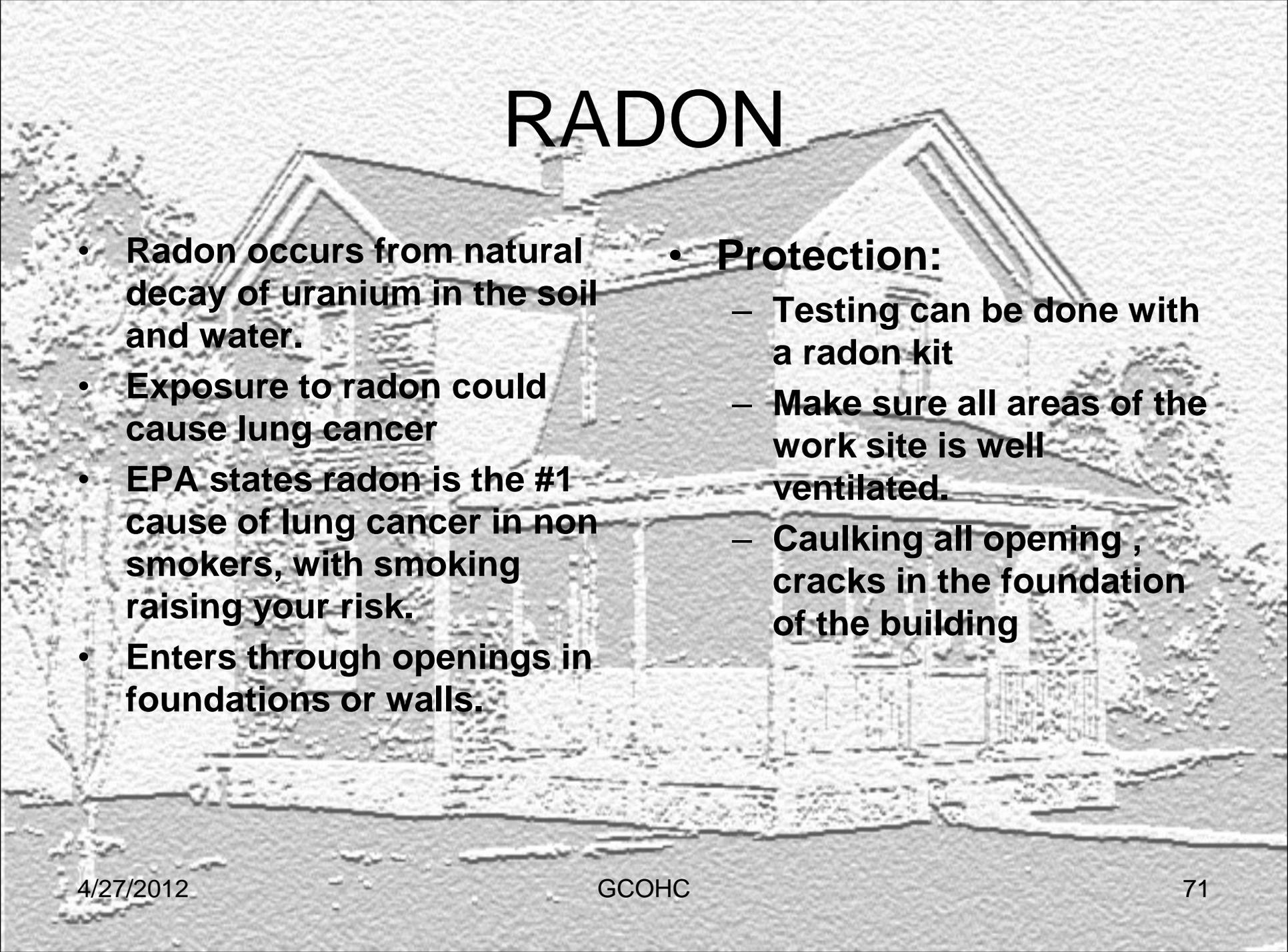
- **Workers can be shocked or electrocuted**
- **Emits carbon monoxide**
- **Could start a fire**
- **Cause noise and vibration.**



PORTABLE GENERATORS

- **Protection:**
 - **Never set up generator in a wet area**
 - **Inspect all cords and plugs**
 - **Do not overload**
 - **Always use GFCI's**
 - **Make sure it is properly grounded**
 - **Never use inside**
 - **Do not place it near windows, doors or opening into the building**
 - **Let the generator cool before refueling**
 - **Only store fuel in proper containers**
 - **Do not smoke while refueling**
 - **Wear hearing protection when noise is over 85 decibals**
 - **Training**

RADON



- **Radon occurs from natural decay of uranium in the soil and water.**
- **Exposure to radon could cause lung cancer**
- **EPA states radon is the #1 cause of lung cancer in non smokers, with smoking raising your risk.**
- **Enters through openings in foundations or walls.**
- **Protection:**
 - **Testing can be done with a radon kit**
 - **Make sure all areas of the work site is well ventilated.**
 - **Caulking all opening , cracks in the foundation of the building**

SANITATION

- **Clean drinking water and toilet facilities will reduce the incidence of illnesses from bacteria such as *E. coli*, salmonella, and listeria.**
- **Protection:**
 - Adequate supply of drinking (potable) water. Especially in warm weather.
 - Container keep clean and the lid sealed.
 - Toilets 1 facility for every 20 workers.
 - Hand washing facilities should also be available. (hand sanitizer at the least)



CRYSTALLINE SILICA

- **Found in gypsum board and in larger amounts of spackle.**
- **Natural part of soil & quartz**
- **Exposed while sanding, cutting, buffing or breaking gypsum board.**
- **ID as a human lung carcinogen
smoking adds to the damages**



CRYSTALLINE SILICA



- **Symptoms: after 15-20 years**
 - Shortness of breath
 - Fatigue
 - Chest pain
 - Respiratory failure
 - Severe shortness of breath
 - Weakness
 - Weight loss
- **High concentrations:**
 - Sever disabling shortness of breath
 - Weakness
 - Weight loss
 - Death

CRYSTALLINE SILICA

- **Protection:**
 - **Reading the MSDS on the material**
 - **Provide engineer controls (using exhaust ventilation)**
 - **Wet down the gypsum/spackle before working on it**
 - **Wear proper respirator**
 - **Wear disposable clothing**
 - **Training & health screening (only x-rays can tell if lung damage)**
 - **Wash hands before eating, drinking, smoking, touching face.**

STRUCK BY HAZARDS

- **Could be encounter on site by vehicles, materials being carried by others, window sashes with broken cords.**
- **Injuries may include**
 - Bruises, broken bones, cuts, concussions, amputations, and death
- **Protection**
 - In view of operators
 - Vehicles have horns/back up alarms
 - Lower blades/forks
 - Wear hard hat
 - Follow good housekeeping
 - Wear safety glasses
 - Walk your space
 - Stay alert

WALKING & WORKING SURFACES

– Different types of surfaces in buildings

- Wet floors
- Grease/paint spills
- Loss flooring/carpet
- Electric cords across walk ways
- Sleet or ice



• Protection:

- Wear slip resistant treads
- Clean up spills immediately
- Keep walk ways clear of debris & equipment
- Tape down cords
- Salt or sand walkways in winter

HEALTH & SAFETY PLAN

- **Safety plan includes five parts:**
 - **Grantee health and safety**
 - Group that gets DOE funds
 - **Crew & Contractor health and safety**
 - Must comply with OSHA
 - **Client health and safety**
 - The work will not harm the residents
 - **Potential Hazards Considerations**
 - Attention is required for numerous possible hazards
 - **Deferral Standards**
 - Decisions to delay work will be decided by the Agency

RESPIRATORY PROTECTION

- **Before using any tight fitting respirator**
 - Training
 - Pulmonary test
 - Medical exam (heart & lung)
 - Medical history
- **Two basic types:**
 - Air-purifying respirator (APR)
 - Atmosphere-supplying respirator (ASR)

RESPIRATORY PROTECTION

- APR



- ASR

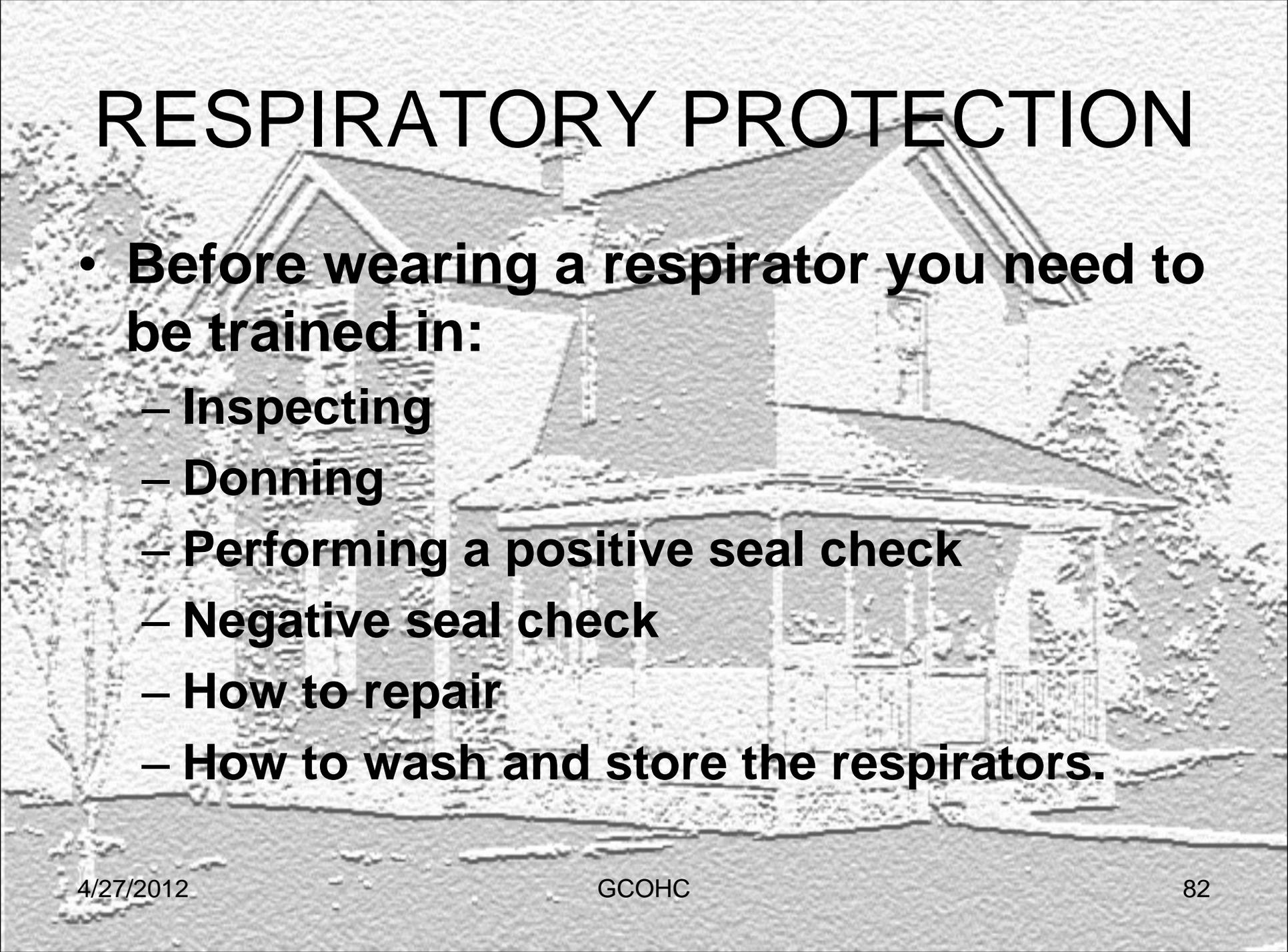


RESPIRATORY PROTECTION

- **APR:**
 - **Single use**
 - **Half-mask**
 - **Full-face**
- **Used against dusts, mold spores, and toxic chemicals (vapors & gases require chemical specific cartridges)**
- **All respirators should be marked “NIOSH Approved” and cartridges**
- **Not for use in IDLH situations like lack of oxygen or more than 2 hazards i.e. chemicals, dusts, and mercury**



RESPIRATORY PROTECTION



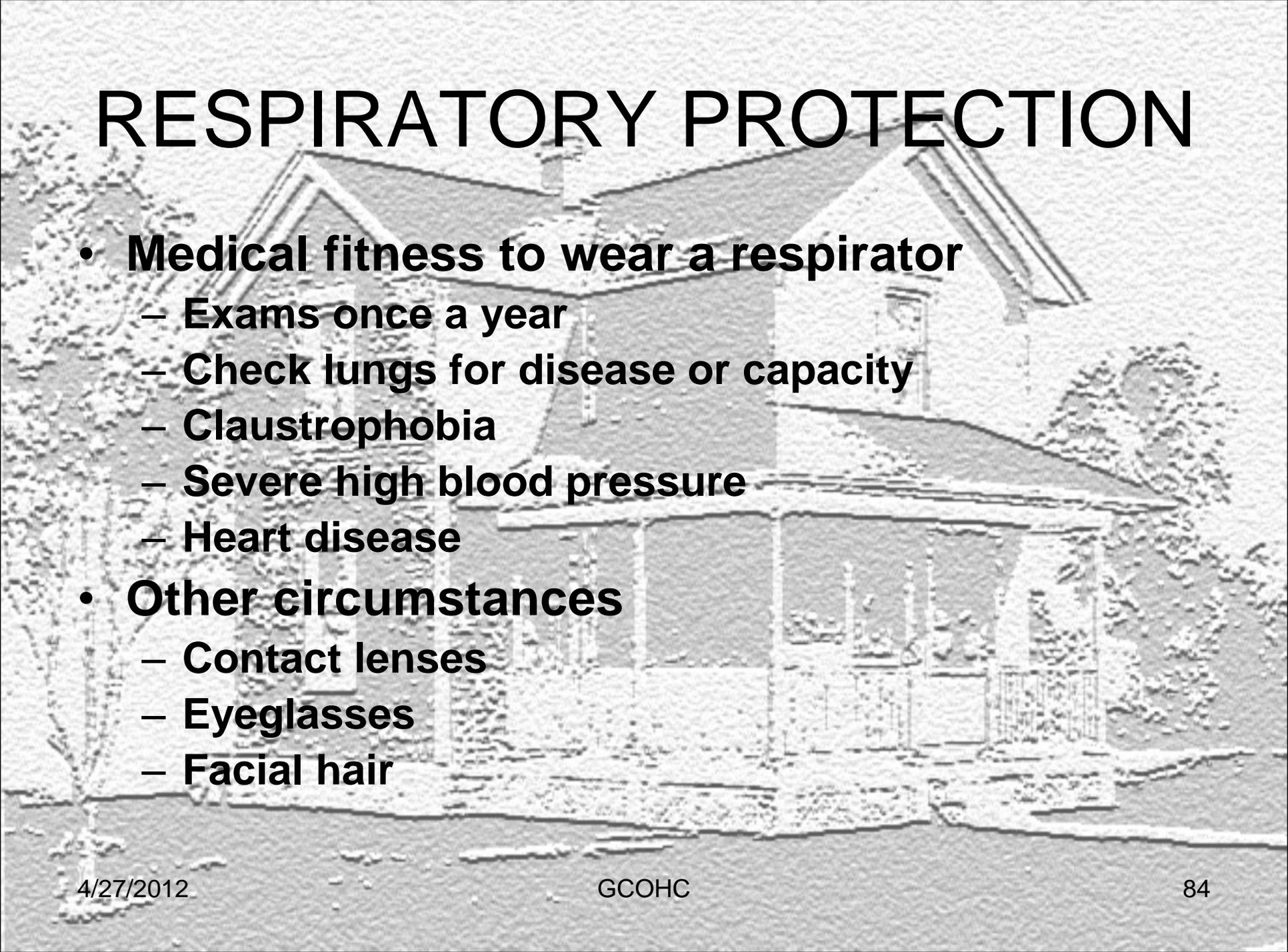
- **Before wearing a respirator you need to be trained in:**
 - **Inspecting**
 - **Donning**
 - **Performing a positive seal check**
 - **Negative seal check**
 - **How to repair**
 - **How to wash and store the respirators.**

RESPIRATORY PROTECTION

- **Respirator Fit:**
 - **Qualitative fit test**
 - Checks effectiveness of respirator
 - Method-subject to variety of different test such as smelly (banana oil), taste (saccharin), or an irritant (special smoke test w/tube)
 - **Quantitative fit test**
 - While wearing respirator modified with a probe it measures the concentration or air outside the mask compared to those inside mask. Uses a computer.

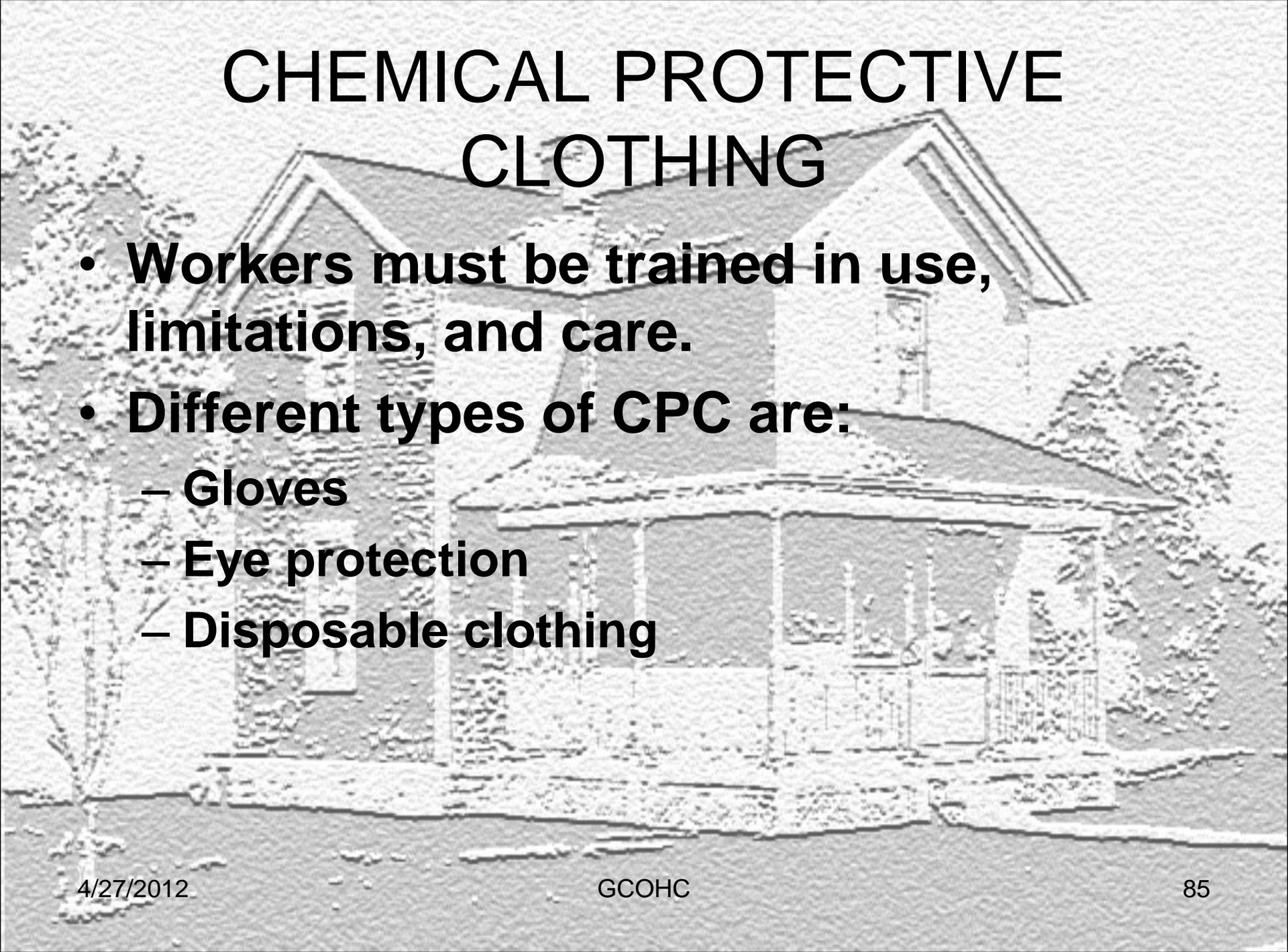


RESPIRATORY PROTECTION



- **Medical fitness to wear a respirator**
 - Exams once a year
 - Check lungs for disease or capacity
 - Claustrophobia
 - Severe high blood pressure
 - Heart disease
- **Other circumstances**
 - Contact lenses
 - Eyeglasses
 - Facial hair

CHEMICAL PROTECTIVE CLOTHING



- **Workers must be trained in use, limitations, and care.**
- **Different types of CPC are:**
 - **Gloves**
 - **Eye protection**
 - **Disposable clothing**

CHEMICAL PROTECTIVE CLOTHING

- **Gloves**

- Not one glove can protect you from all hazards
- Glove type needs to be selected based on the type of work to be performed
- Leather for possible jobs that may cause cuts and scarps
- Latex (rubber) if working with mild detergents or mold
- Neoprene/nitrile when working with strong cleaning solutions



CHEMICAL PROTECTIVE CLOTHING

- Eye protection
- Safety glasses have to be Z-87 ANSI
- Like gloves not all glass are created equal
 - May need goggles when using liquid chemicals and fine dust particles
 - Face shield if using high speed grinders, circular saws, or with goggles for more protection
- Which sense would you least like to lose??



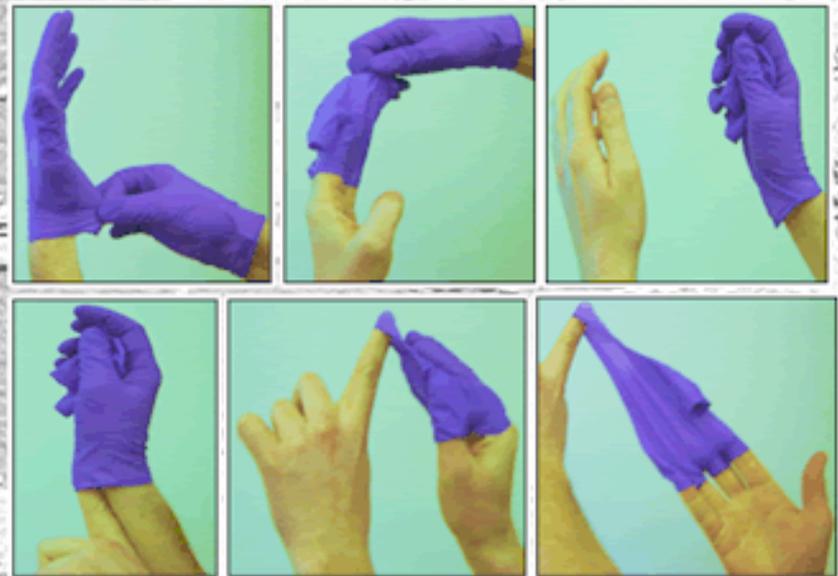
CHEMICAL PROTECTIVE CLOTHING

- **Disposable clothing**
 - Used to prevent skin and clothing contact with contaminated surfaces
 - As for gloves and eye protection there are different types of protective clothing
 - Most importantly it will keep from taking contaminants home to your family



CHEMICAL PROTECTIVE CLOTHING

- **Training**
- **Proper donning and doffing procedures should be covered, this will help in the prevention of spreading contaminants to clean areas and yourself.**
- **Remember that equipment and clothing may be contaminated even if they do not appear discolored**
- **Dispose of clothing properly**
- **Wash hands with soap & water when finished**



WEATHERIZATION

- **The job can be done efficiently and on time, along with being done safely!!**

ALWAYS WALK YOUR SPACE!

WEATHERIZATION

