

# **UTAH WEATHERIZATION HEALTH AND SAFETY STANDARDS**

The health and safety of weatherization staff, subcontractors, and clients is a major concern of state and local weatherization agencies. The work performed by local agencies involves interaction with all aspects of the operation of homes by installers, auditors, and inspectors. It is of great importance therefore, that agency staff maintains awareness of the potential hazards associated with the weatherization process. These standards provide only general guidelines for health and safety concerns. Detailed specifications regarding the health and safety of workers in the construction industry can be found in Construction Industry OSHA Safety and Health Standards (29 CFR 1926/1910), which is available from the U.S. Department of Labor.

These standards are applicable to all workers providing services using funding under the (WAP). Chapter XVII, subpart c, item 1926.20 of the OSHA standards which states that: *"no contractor or subcontractor for any part of the contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety."*

## **Accident prevention responsibilities**

1. It shall be the responsibility of the employer to initiate and maintain such programs as may be necessary to comply with this part.
2. Such programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employers.
3. The use of any machinery, tool, material, or equipment that is not in compliance with any applicable requirement of this part is prohibited. Such machine, tool, material, or equipment shall either be made inoperable or shall be physically removed from its place of operation.
4. The employer shall permit only those employees qualified by training or experience to operate equipment and machinery.

Each Weatherization agency will be required to develop a health and safety policy with specific standards for their weatherization staff to abide by. Each agency will submit these policies and standards to the Utah Division of Housing and Community Development (DHCD) for review and approval. Agency compliance to the state standards and their own policies and standards will be reviewed during the regular field monitoring by the Utah Division of Housing and Community Development. Each home weatherized by the WAP must be individually assessed to determine the existence of potential hazards to workers and clients.

## **Workers**

The Utah Division of Housing and Community Development will allow local weatherization agencies to issue a stop work order if at any time workers are or will be exposed to conditions regarded as unsafe or unhealthy as determined by OSHA Construction Industry Standards or by policies and standards set by the local weatherization agency. Each worker is responsible for working in a safe manner so as not to endanger either himself or others. Individuals who continue to demonstrate that they are unable to work in a safe, workmanlike manner will be subject to disciplinary action by the weatherization agency.

## **Clients**

Local agencies and their representatives are required to take all reasonable precautions against performing work on homes that will subject either themselves or clients to health and safety risks. Prior to work commencing on the residence, the agency will make an evaluation of the individual health of the home's occupants. *Attachment #20* of the Weatherization State Plan, Indoor Air Quality and Safety Checklist, must be used along with any other material needed to determine possible risks to both the client and weatherization workers. In cases where a person's health is fragile and/or the crew work activities would constitute a health or safety hazard, the occupants at risk will be required to leave during these work activities.

Weatherization services can be provided in a manner that minimizes risk to workers and clients. Although the Weatherization Assistance Program is not capable of providing all the solutions, awareness of potential hazards is essential to providing quality services. The following is an overview of potential health and safety risks associated with home weatherization and approaches to minimize exposure to workers and clients:

### **Hazardous Materials**

Compliance with the Hazard Communication standard, Title 29 CFR 1910.12 is required in order to protect the health and safety of workers. The major requirements of this OSHA standard include:

1. Preparation and implementation of a hazardous communication program so that workers are informed about potential hazards.
2. Identification of hazardous materials in the workplace.
3. Provision of container labels and other forms of warning.
4. Employee access to Material Safety Data Sheets (MSDS).
5. Provision of employee training regarding hazardous materials.
6. Complete exchange of information between contractors and subcontractors regarding the use of hazardous materials.

### **Client safety must also be safeguarded**

1. The use of hazardous chemicals must be discussed with the client prior to use. Special precautions must be taken if any occupant of the home has respiratory ailments, allergies, is pregnant or has unique health concerns. Use of urethane foam in the living area must be minimized. Health and safety stop work orders shall be documented in the client file.
2. The installation of hazardous materials must be done in well-ventilated areas.

### **To Minimize Exposure**

1. When household and other hazardous chemicals are stored in a weatherization eligible dwelling, client education regarding these substances must be provided. Written documentation of the hazard must be provided to the client. Weatherization staff should recommend that they be removed and stored elsewhere outside of the building envelope. Potentially hazardous situations must be documented on the BWR and in the client file.
2. Agency personnel working around volatile organic compounds (VOC's) must use proper ventilation and appropriate respirators.

3. Material Safety Data Sheets (MSDS) must be provided by all suppliers of weatherization materials for items such as caulking, glazing materials, insulation products, adhesives, cleaning chemicals, paint, stain, varnish type products, etc. Payment for materials will not be made until the distributor or manufacturer provides them to the agency. These sheets must be made available to all employees that handle, use, or otherwise come in contact with these materials. Employees must be made aware of the potential hazards of all hazardous materials they use in the weatherization process. MSDS sheets are to be made available for inspection by the DHCD during the regular monitoring visits. It is recommended that each weatherization crew carry a set of these MSDS sheets for reference. It will be up to the agency weatherization coordinator to ensure that all crewmembers understand the importance of these sheets.

## **Asbestos**

Description: A fibrous, non-combustible mineral

### **Health and Safety concerns**

Asbestos fibers are very small. When disturbed and released into the air, the fibers can be inhaled. Exposure may result in lung cancer, asbestosis, or mesothelioma. There is no safe exposure level when it comes to asbestos.

### **Sources in homes**

Until its use was strictly limited in the 1970's, asbestos was used in a large number of building products. The most common applications that could involve interaction with weatherization staff include:

- Furnace insulation
- Pipe insulation
- Duct insulation
- Siding shingles
- Furnace gaskets
- Ceiling texture materials

To a lesser degree, workers may encounter asbestos in plaster, joint compound, roof shingles, floor tiles, and other building products.

### **To Minimize Exposure**

1. Learn to recognize suspected asbestos containing materials. (Training, videos, the E.P.A. "Purple Book")
2. Avoid disturbance of friable asbestos containing materials (ACM's). Friable asbestos is "any material containing greater than one percent asbestos by weight or volume that hand pressure can crumble, pulverize, or reduce to powder when dry, or any asbestos-containing material that can reasonably be expected, as a result of the demolition or renovation to be undertaken, to become pulverized through breaking, chipping, crumbling, crushing, or other means of rendering fibers available to the ambient air."
3. If potential for limited exposure exists, wear appropriate respirators, protective clothing, etc. Wetting down suspected ACM's would reduce the levels of

airborne fibers although this will not completely eliminate the risk in all situations and may, under certain circumstances, relocate the asbestos fibers to another location where they could pose a risk.

4. Provide written disclosure to client regarding the existence of suspected ACM's and provide client education advising non-disturbance of such materials.
5. All crews, inspectors, contractors and their supervisors, or anyone else who visits weatherization eligible homes will be required to receive asbestos awareness and identification training.
6. All OSHA laws that deal with asbestos and weatherization are to be enforced and be made available to all workers.
7. Protective gear such as Tyvek coveralls, head coverings, booties, etc., gloves, eye protection, respirators, and other safety equipment as required by law must be provided to all employees that will come into contact with asbestos or suspected asbestos products. Employees will be required to use the appropriate safety equipment as required under state policy. Each agency will be required to monitor their employees' adherence to state policy and local agency policies and standards. Agencies will be responsible for the compliance of their employees and contractors. Failure of an agency or individuals at that agency to follow state policies on asbestos will result in disciplinary action. Continued violations will result in defunding of the Weatherization program for that agency. Current Weatherization contracts will be terminated and future contracts to provide Weatherization services may not be issued.
8. In order to achieve the required OSHA fit test of a respirator, it may be necessary for Weatherization staff required to use respirators to be clean-shaven. A clean-shaven policy may include removal of most facial hair including beards, some moustaches, long sideburns, etc. It might be possible to waive the clean-shaven policy if the employee will use a full head type respirator in the place of a full or half face type.
9. Contractors must follow the state and local policies and standards 100%. No exceptions will be given under any circumstances.
10. Liability for asbestos cannot be waived.

**This information is a general guidance for Weatherization Personnel and does not provide detailed specifications for proper handling of ACM's.** Training and supervision for personnel providing asbestos remediation services are beyond the scope of the WAP. Weatherization personnel or appointed representatives shall not remove or dispose of asbestos without proper training and without prior authorization from the Division of Housing and Community Development.

## **Combustion Systems**

Definition: Fuel burning appliance used for water heating, space heating, cooking, and clothes drying.

### **Health and Safety concerns**

1. Combustion or smoldering of surrounding materials resulting from unsafe operation of the heating system.

2. Combustion or smoldering of combustible materials located dangerously close to combustion devise or hot flue.
3. Release of unhealthy combustion products into home environment.
4. Health hazards resulting from dysfunctional heating system. (No heat)
5. Gas leaks - risk of contamination of house air or explosion (Especially propane).
6. Fire resulting from inadequate heat dissipation due to insulation around heat-producing sources including flue vents.
7. Scalding due to water temperature set too high.
8. Non-certified combustion appliances currently installed in mobile homes.

### **To Minimize Risks**

1. Provide proper clearances between combustible materials and wood/coal stoves, kerosene heaters, furnaces, boilers, water heaters, and flues. If provision of proper clearance is beyond the scope of weatherization, precautions must be taken to avoid installation of measures that will aggravate the situation.
2. Be certain that furnaces and water heaters have sufficient draft, no spillage of combustion products, and less than 50 ppm CO in combustion products.
3. Be certain that furnace heat exchanger is not cracked or otherwise defective or hazardous.
4. Provide proper ventilation for combustion system. Vent gas clothes dryers to the outside. For wood and coal burning stoves, provide a clean chimney. For kerosene and other unvented combustion appliances provide client education regarding the need to provide proper ventilation when operating equipment.
5. Verify proper clearances between heat producing sources and combustible materials, including insulation.
6. Provide repair of gas leaks. If major gas leaks are encountered, ventilate the area, advise clients to vacate the premises, and immediately contact the local gas utility. Call from a neighbor's telephone in order to eliminate the risk of an explosion.
7. Turn down the water heater temperature to 120 degrees Fahrenheit when possible.
8. When an un-vented space heater is present in the unit, NO Weatherization work will be allowed unless the Weatherization crew or contractor is allowed to remove and dispose of it.
9. A combustion appliance safety check will be required on "all" furnaces, and water heaters. Safety checks on other combustion appliances such as gas stoves, ovens, dryers, etc. may also need to be completed. Combustion appliance safety and tune-up forms are found in *Attachment #22* of the Utah Weatherization Program Guidelines
10. All exposed ductwork will be sealed with approved mastic. This includes ductwork in both heated and non-heated areas. This also includes both delivery and return systems. Forced air heating and cooling systems must be balanced to eliminate inefficiency, basement depressurization, and moisture penetration through house pressurization.
11. Mobile homes with standard non-certified atmospheric draft water heaters or furnaces in the living space shall not be weatherized until proper equipment is installed. The same applies with non-certified wood stoves. Mobile homes with

standard non-certified atmospheric draft water heaters located in compartments accessed from the outside can be weatherized providing the following precautions are followed:

- a. The compartment is sealed from the rest of the mobile home.
- b. The existing flue is properly installed, secured, and has sufficient height above the roofline.
- c. Adequate unrestricted combustion air vents into the compartment exist.

## **Hantavirus Respiratory Distress Syndrome**

Description: A viral infection that is contracted through exposure to infected rodents or rodent urine, feces, or saliva. Exposure can occur when infected matter comes in contact with the mouth, an open sore, cut, mucus membrane, or is inhaled along with dust that has been disturbed.

### **Health and Safety Concerns**

Hantavirus is a potentially life threatening disease that results in fever, chills, muscle aches, and breathing difficulty. Symptoms often mirror those of the common flu. Untreated it is often fatal and even with treatment, the mortality rate is high. Although this disease has apparently been around for decades and the number of new cases each year is very low, the seriousness of the syndrome requires awareness and prevention.

### **To Minimize Exposure**

Avoid contact with rodents, droppings and any items contaminated by them. Eliminate water, food, and shelter for rodents in or around your home. Wash your hands often, especially before eating. Keep food and drink stored safely away from rodents prior to preparation and consumption and off of surfaces that could be contaminated. Wear a respirator, gloves and coveralls in areas where rodents or rodent feces may exist. Minimize dust disturbance in crawl spaces and other areas where rodents or rodent feces may exist. Have homeowner remove evidence of rodent feces inside heating system ducts according to proper procedures before furnace work or duct sealing begins.

Disposal of dead rodents, droppings or contaminated material must adhere to the following precautions:

1. Put on rubber gloves
2. Thoroughly spray animal, droppings, contaminated material, or nests with a mixture of 3 ounces of bleach in one gallon of water.
3. Use a paper plate, paper towels, or shovel to place disinfected material and disposable cleaning items into a plastic bag.
4. Seal or tie the bag and place it into another bag.
5. Place the bag in a covered trash container for regular trash disposal.
6. Disinfect non-disposable cleaning items.
7. Wash hands thoroughly with soap and water after clean up.
8. When laundering contaminated items, wear rubber gloves and wash clothing in hot water.
9. Surfaces should be cleaned with soap and water and then wiped with a disinfectant.

## Other Air Quality Concerns

In addition to asbestos and combustion systems, there are a number of other sources of indoor air pollutants in homes that may present long-term health risks to clients. Precise knowledge is lacking regarding the interaction of weatherization of homes and indoor air quality. Awareness of indoor air pollutants and attention on the part of weatherization personnel to the level of air-tightening measures performed on a home will aid in the prevention of making a bad situation worse. Blower door testing provides important information about air leakage levels in homes and can aid in the prevention of over-tightening of homes.

1. **Radon** - an odorless, colorless gas that occurs naturally in the earth's crust. Long-term exposure to elevated levels may cause lung cancer. Present research indicates that weatherization usually has little effect on radon levels.
2. **Formaldehyde** – a strong smelling, colorless gas that is a component of many building materials. Health hazards include lung ailments, impaired brain and vision function; it is fatal in high concentrations. Extensive air leakage work is not recommended on homes with known significant levels of formaldehyde.
3. **Mineral fiber** - fibrous glass insulation material. Known to be an irritant to lungs, eyes, and skin. Preliminary research indicates no long-term negative health effects resulting from exposure to high levels of mineral fiber but further research is ongoing. Exposed mineral fiber shall not be left in occupied areas of homes. Workers are required to wear properly rated respirators and protective clothing when working with or around mineral fiber products.
4. **Airborne particulate matter**- is known to cause lung cancer. Excessive air tightening can increase levels of carcinogenic by-products in homes. Homes with high levels of these products should not be over tightened.

### **To Minimize Risks**

1. A pre and post blower door test will be required on 100% of all dwelling units. Exceptions must be documented on the BWR and client file. A sample blower door operation checklist can be found in *Attachment 21*.
2. The blower door test must identify the (CFM) to establish a baseline tightness.
3. The blower door will be used for leak detection in the building shell, duct delivery and return systems, and assisting with combustion appliance testing.

## Wiring

Definition: Insulated metal conductors for distribution of electricity.

### **Safety Concerns**

1. Electric shock while working around wiring in all areas of homes.
2. Fire resulting from arcing between loose wiring connections.
3. Fire resulting from lack of dissipation of heat due to insulation around heat producing sources.

**To minimize risk**

1. Demonstrate caution when working around wiring.
2. Verify proper wiring connections and proper fusing.
3. Verify proper blocking out of insulation around heat producing sources.

**Moisture****Health Concerns**

1. Allergic reactions or respiratory infections as a result of exposure to biological contaminants that result from high relative humidity.
2. Damage to building materials from biological action.

**To Minimize Hazard**

1. Eliminate sources of excess moisture; avoid over-tightening of dwelling; assure proper ventilation, especially in kitchen and bathroom areas.
2. Assure clothes dryers are vented to the outside.
3. Educate clients that gas ranges and/or ovens are not to be used for space heating.
4. During every energy audit a comprehensive moisture inspection of the dwelling unit will be completed. This inspection will also include a brief interview with the occupant(s) regarding health & safety. A health and safety checklist must be completed and turned in with the energy audit forms to the inspectors' supervisor. This checklist must be included in the client file and can be found in *Attachment 20* of the State Weatherization Plan.
5. Training will be provided on how to recognize moisture and ventilation problems. This training will also include how to identify ground water problems as well.
6. Moisture problems when evident will determine the type and amount of Weatherization work to be done.
7. Controlling moisture at the source will be required when excessive amounts of indoor moisture are evident. This will usually take the form of exhaust fans. Caution will be used so that added ventilation devices will not adversely effect combustion appliances.
8. Attic bypasses must be sealed in order to reduce migration of moisture into attic spaces where condensation problems can occur.
9. During the initial inspection and throughout the weatherization process, locate mold, mildew, and any other biological organisms that may be hazardous to the workers or occupants.

**Plumbing****Health Concerns**

The main concern is contracting disease resulting from exposure to raw sewage.

## **To Minimize Exposure**

1. Workers shall take precautions to avoid direct contact with raw sewage or other unsanitary conditions. Clients shall be informed of existing conditions in writing and referred to available resources for assistance.
2. Workers shall take precautions to avoid creating circumstances that will allow pipes to freeze.

## **Lead Paint**

When removing existing windows, doorframes, or other situations where workers may come into contact with lead-based paint, respirators, drop cloths, proper personal hygiene, and other precautions as required by law for the worker and the occupants of the dwelling unit must be implemented. All local agency field staff must follow the procedures as outlined in the Lead Safety for Renovation, Repair and Painting student manual as a text for the EPA Certified Lead Renovator training course.

## **General Workmanship Practices**

Weatherization personnel are required to exhibit caution and care during the course of work on client's homes.

1. Use care when working on ladders.
2. Use power tools only if familiar with the condition and proper operation of equipment.
3. Take appropriate precautions when igniting combustion appliances.
4. Wear respirators, protective eyewear and protective clothing when necessary. The use of respiratory protection is required for individuals working in high dust environments. Agency personnel that wear negative pressure respiratory protection must receive a pulmonary capacity test in order to assure individual capability to wear this equipment.
5. Hearing/ear protection is recommended for individuals working around high decibel equipment.
6. Provide appropriate clean-up following completion of work.
7. Assess structural conditions and demonstrate caution when working in potentially dangerous areas. (i.e. attics)
8. Precautions should be taken when working in areas with low clearance. Proposed work in areas with less than 24" clearance may be waived.
9. Instruct work staff regarding safe lifting procedures to prevent back injuries.
11. Do not take foolish chances.

## **OSHA Requirements**

These and other issues are discussed in detail in the OSHA Construction Industry Standards. Local agency staff is required to become familiar with these regulations. Questions regarding health and safety concerns shall be referred to the Utah Division of Housing and Community Development.

Each local Weatherization agency must meet the following requirements:

1. The agency has provided employees with required applicable safety equipment as listed in the current Utah Weatherization Program Guidelines.
2. Employees have been required to wear OSHA approved respirators as listed in state plan and have received and passed a respirator fit test by a certified technician. (Note: The DHCD will investigate what the specific requirements are and provide that information to all local agencies. The DHCD will also determine what is needed to obtain a respirator fit test and whether we can become certified to conduct those fit tests ourselves and provide related respirator training.)
3. All employees that are required to wear respirators have passed a pulmonary capacity test.
4. Materials Safety Data Sheets (MSDS) have been made readily available on a daily basis to all employees.
5. The agency has established an agency Health and Safety Policy and has submitted a copy to the DHCD.

## **Mold & Mildew**

Policies for dealing with mold & mildew are forthcoming from DOE/MSU Extension and will be implemented when training is provided.