



Arizona  
Department  
of Housing

## WEATHERIZATION HEALTH AND SAFETY PLAN

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WEATHERIZATION  
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## III.4 Health and Safety

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Allowable Department of Energy (DOE) related health and safety (H&S) actions and expenditures are those necessary to maintain the physical well-being of both the occupants and/or weatherization workers where:

- Costs are reasonable as determined by The Department of Energy (DOE) in accordance with this approved Master Plan;
- The actions must be taken to effectively perform weatherization; or
- The actions are necessary as a result of weatherization work.

For DOE funding, each sub-grantee will have 15% of their program operations set aside for energy related health and safety repairs. With oversight by the Arizona Department of Housing Weatherization Assistance Program (ADOH WAP) staff, each sub-grantee will be responsible for the management of their health and safety budget and will be required to bill health and safety repairs as a separate budget line item. Sub-grantees will also be required to obtain written approval from ADOH WAP for all health and safety repairs exceeding \$2,000. This \$2,000 limit is based on the amount typically required if a sub-grantee has to repair or replace evaporative coolers as an H&S measure. Arizona has an abundance of older affordable housing units that are cooled with evaporative coolers. Repair or replacement of these units does not fall within the cost effective guidelines but might be necessary as an H&S action for persons determined to fit the at-risk occupant definition in our guidance.

Sub-grantees are reminded that any DOE health and safety expenses in excess of 15% of the DOE sub-grantee program operations budget will not be allowed or reimbursed.

Sub-grantees and their contractors must be knowledgeable of the H&S Guidance issued by ADOH WAP and outlined in this plan as well as the guidance provided by DOE through WPN 11-6 and the WAPTAC website. Sub-grantees and/or their contractors must have additional training where required by Health and Safety Guidance Table in WPN 11-6.

Sub-grantees must educate their clients regarding H&S. This procedure is documented by using a signed receipt from the head of household which confirms that the information was not only distributed but also explained. This receipt is kept in the client file. Further information and guidance regarding this process can be found in the section of this plan entitled "Client Education". Forms are available to the sub-grantees from the ADOH WAP website at: <https://housing.az.gov/documents-links/forms/weatherization>.

## Home Assessment & Client Evaluation

The sub-grantee must determine presence of at-risk occupants before proceeding with weatherization services. At-risk occupants are those persons with pre-existing health conditions or elderly persons aged 65 years or older, whose health conditions might be adversely affected by the lack of heating or air conditioning in their residence or whose condition could be exacerbated by work site hazards. Two separate health & safety evaluation forms must be completed. There is a form for the client to complete and a form for the auditor to complete. The client and auditor will review and sign both forms. These forms are to be completed twice. First, during intake process and again during the initial audit, before weatherization work begins.

Crew and client H&S issues are viewed to determine site conditions and work procedures. Working from this concept assumes that any hazard associated with a work site, whether it is a work practice, an existing condition, client behavior, etc., has the potential of harming both crew and client. A holistic approach towards H&S is taken throughout the entire process of weatherizing a home, with special emphasis given during the initial audit.

The initial audit, by a qualified auditor, should include sensory inspections and diagnostic testing, as listed in the Weatherization Assistance Program (WAP) guidelines. This testing is done to verify the existing conditions of the home and any H&S issues that could arise or halt production on the home. Details on existing conditions that could hinder weatherization work are listed below.

### **All H&S guidance is contingent upon having well trained auditors. H&S issues must be revealed before any work begins. Occupant Pre-existing or Potential Health Conditions**

An important aspect of any inspection is client education, where the occupant(s) health problems are addressed. Once a clear understanding has been reached between the auditor and the client(s), work that will not aggravate any client pre-existing health condition shall begin. In some rare instances, a deferral may be required.

When a person's health may be at risk and/or the work activities could create a H&S hazard, the at risk occupant will be required to take appropriate action based on the severity of the risk. Temporary relocation of at-risk occupants may be allowed. Failure or inability to take appropriate actions will result in a deferral.

## Health & Safety Issues

As potential hazards are identified by the intake specialist and auditor, they are analyzed in terms of their severity and how they will be dealt with, up to and including deferral. Wherever possible, measures should be considered through the cost justification method of the saving to investment ratio (SIR) at 1 or greater as an Energy Conservation Measure (ECM) first, before using funds from the H&S allocation. Clients must always be informed of any Health or Safety risk discovered during the evaluation process in writing and written confirmation of receipt of

that information by the client must be obtained and kept in the client file. A listing of H&S issues is compiled, any of which that can't be corrected can result in a deferral on any given project. They are as follows:

### **Air Conditioning and Heating Safety**

"Red tagged", in-operable or non-existent HVAC system replacement, repair or installation is allowed where climate conditions warrant, unless prevented by other guidance herein. Arizona climate involves a defined heating and cooling season with a Heating Degree Day (HDD) measurement range from 1180 to over 7200. The Cooling Degree Day (CDD) measurements in Arizona range from 573 to more than 5100. Arizona has a vast difference across the state due to the four recognized climate zones and a vast difference in elevation changes from a few hundred feet above sea level to more than 8000 feet above sea level.

Research indicates that of all people who die of heat stroke, about 80 percent are age 50 or older. Deaths attributed to lung disease, diabetes and hypertension increase more than 50 percent during heat waves. Heat stroke occurs 12 to 13 times more frequently in people ages 65 and older than in younger persons. It is also an accepted medical fact that infants and children up to four (4) years of age are very sensitive to the effects of high temperatures and rely on others to regulate their environment.

Air conditioning is the number one (1) protective factor against heat-related illness and death affecting people with health issues. Therefore, air conditioning system replacement, repair or installation is allowed to be categorized as a H&S measure in homes with occupants under four (4) years old, over 65 years old and/or where there are at-risk occupants. Air conditioning system replacement, repair or installation must be attempted through cost justification as an ECM first before using H&S funding. When this measure can be justified by the approved REM, the audit, replacement, repair or installation may not be included under H&S. All replacement of HVAC equipment shall first be modeling in REM Design to attempt a SIR of one (1) or greater prior to being installed as an H&S measure.

Houses with occupants between the ages of four (4) to sixty-four (64), requesting the need for air conditioning based on health risk must provide a letter from a doctor defining the condition requiring an air conditioned environment and the maximum allowable air temperature relevant to that person's individual condition.

#### **Rental Property Exception:**

Air conditioning units cannot be installed on rental properties as it is a requirement of the landlord pursuant to the Arizona Landlord Tenant Act.

Repair of all combustible fuel line leaks from the meter or tank to the heating system or appliance are allowable H&S measures. Materials must meet federal, state, and local code. In the living area, only repairs of gas cooking appliances to eliminate gas leaks and reduce unsafe levels of carbon monoxide are allowed. Repair materials must meet federal, state and local code. Installation of protective materials on combustible surfaces adjacent to energy systems to

meet National Fire Protection Association (NFPA) clearance codes are allowable. Materials and installation must meet NFPA specifications. Materials must meet federal, state and local code.

## Heating Systems

Heating systems are repaired or replaced, under H&S, when non-operational or unsafe. This measure is done in order to eliminate unsafe levels of carbon monoxide in the living area and to ensure adequate heating. Justification documentation in the form of the appropriate heat system checklist (per energy source) which includes all required diagnostic recordings for the individual unit, and photos demonstrating the specific issue(s) with the system must be in the client file. Replacement of operational units, where diagnostic readings are attainable, must be attempted to be cost justified as an ECM, using regular weatherization funds with an SIR>1 before using H&S funds. A unit with a cracked heat exchanger, where diagnostic readings are attainable, must be attempted to be replaced through cost justification as an ECM prior to using H&S funding. Replacement of non-operational units can only be completed under H&S funding.

## Air Conditioning (AC) & Cooling System

When an AC system must be replaced and it cannot be justified as an ECM replacement, it is an allowable expense under H&S, only for at risk clients and requires an approved waiver from ADOH WAP. Evaporative Cooling is considered an H&S measure and does not require a waiver unless the \$2000 threshold is exceeded.

### **PACKAGE UNIT SYSTEMS:**

When a package unit is encountered and only one component of that system is inoperable, an attempt to service the unit must be made first, using H&S funds. If servicing the unit does not work and replacement of the inoperable component is determined to be less economical than the replacement of the entire unit, H&S funds may be used. Prior approval from ADOH WAP will be required.

The sub-grantee must determine presence of at-risk occupant(s) while ensuring the system is present, operable and performing. Sub-grantees must discuss and provide clients with information on the appropriate use and maintenance of the unit.

## Appliances and Water Heaters

The replacement of a water heater is an allowable cost under H&S when it cannot be replaced as an ECM, under one or both of the following conditions:

- When high co levels or drafting issues cannot be resolved on old unit
- When the cost of repair exceeds the cost of replacement or if the broken water heater is more than 10 years old.

Pictures of the old water heater are to be kept in the client file.

Information and explanation on appropriate use and maintenance are to be provided to client after installation. Disposal of old appliances and water heaters must be handled by sub-grantee or their contractor.

Replacement and installation of appliances other than water heaters (such as stoves or washing machines) are not allowable under H&S costs.

## Asbestos

Asbestos in the interior of a dwelling, that would need to be addressed either directly or incidentally during the weatherization process, is not an allowable H&S cost. Testing by an Asbestos Laws and Regulations Act (AHERA) professional for Asbestos is an allowable H&S cost. However, abatement of asbestos is not an allowable H&S cost. Policies have been in effect for asbestos presence and related work practices for many years. The approach is not to disturb, cut or drill contaminated material and avoid those measures that might do so. In instances where measures can be installed without disturbing asbestos surfaces or materials, that approach should be used. In instances where a local authority, such as code enforcement, imposes specific guidelines or requirements, program staff are to make themselves aware of those restrictions and comply.

If it is determined that weatherization work cannot be performed without creating a hazard, the project must be deferred. The client is to be informed in writing of the potential hazard and the agency must not return the weatherize until an AHERA certified professional issues a clearance statement. A copy of this statement/report must be kept in the client file.

Prior to drilling or cutting an exterior wall, the subsurface must be inspected for asbestos.

When vermiculite is present, unless testing determines otherwise, the unit is to be deferred. Where blower door tests are performed, prior to asbestos free vermiculite certification, it is a best practice to perform pressurization instead of depressurization. Encapsulation by an appropriately trained professional is allowed. However asbestos encapsulation, testing and/or removal cost are not reimbursable by the ADOH WAP.

With regard to pipes, furnaces and other small covered surfaces, assume asbestos is present in the covering materials. Encapsulation is allowed by an AHERA asbestos control professional and should be conducted prior to blower door testing.

Clients must be informed that suspected asbestos is present and what precautions will be taken. Clients must be instructed not to disturb suspected asbestos containing material. Clients must be provided information on asbestos safety and steps to correct deferral conditions, if applicable. The client is required to sign a form, provided by the sub-grantee, indicating they have been informed.

## **Biologicals and Unsanitary Conditions – odors, mustiness, bacteria, viruses, raw sewage, rotting wood, etc.**

A sensory inspection is required. Client must be informed of observed conditions. Clients must be provided information and explanation on how to maintain a sanitary home and steps to correct deferral conditions, if applicable.

Remediation of conditions that may lead to or promote biological concerns and unsanitary viruses is not an allowable cost. Addressing bacteria and viruses and/or cleaning or repairing biological and unsanitary conditions to perform weatherization are also not allowable costs. Deferral may be necessary in cases where a known agent is present in the home that may create a serious risk to occupants or weatherization workers. Also see Mold and Moisture bullet below.

## **Building Structure and Roofing**

Site conditions identified and documented by the Initial Auditor that poses a safety hazard to its employees and subcontractors and cannot be corrected within the scope of the program may result in a deferral. Building structure & roofing should be evaluated visually so that no existing conditions are disturbed.

Building Structure – Structural problems with dwellings often lead to deferral because the scope is beyond the means of the program to treat. Beyond simple incidental repairs, such as roof patching, there is no feasible means to address severe structural defects.

During the pre-inspection or initial inspection of the dwelling, the auditor must have access to all aspects of the structure in order to adequately and appropriately gather data for the REM energy audit, if not using the priority list and/or to conduct the weatherization work. Items such as clothing, dogs, trash or other impediments restricting access to any portion or portions of the dwelling that blocks necessary access may constitute a deferral.

Building rehabilitation is beyond the scope of the WAP. H&S funds should not be used when the repair is a component of an ECM. In that case, the repair should be cost justified as an incidental repair. Clients must be notified of structurally comprised areas, if applicable.

## **Code Compliance**

Correction of pre-existing code compliance issues is not an allowable cost unless they are triggered by weatherization measures. State and local (or jurisdiction having authority) codes must be followed while installing weatherization measures. Condemned properties and properties where “red tagged” H&S conditions exist that cannot be corrected under this guidance should be deferred. Per WPN 11-6a if a permit is pulled to replace an HVAC system, water heater, or other appliance, requiring a permit and it is required by the municipality to upgrade all smoke alarms in the home to hardwired smoke alarms with battery backup, it would be allowed

Clients must be notified of observed code compliance issues, if applicable. H&S funds should not be used when the repair is a component of an ECM, such as fixing a light fixture in order to

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install a CFL bulb. In this case the cost should be cost justified as an ECM with the associated incidental repair.

## **Combustion Gases**

Proper venting to the outside for combustion appliances, including gas dryers is required. Correction of venting is allowed when testing or inspection indicates a problem. Combustion safety testing is required when combustion appliances are present.

Correction of venting issues shall be completed and should be done as an incidental repair when it is a component of an ECM. Proper venting to the outside for combustion appliances, including gas dryers, is required. Combustion safety testing is required when combustion appliances are present. Inspections by the auditor as listed above must include:

- Inspections of venting of combustion appliance and confirmation of adequate clearances to combustibles.
- Testing natural draft appliances for draft and spillage under worse case conditions before and after air sealing.
- Inspection of cooking burners for operability and flame quality.
- Testing by approved WAP procedures of ambient air in combustion appliance zones and undiluted flue on applicable appliances are above the allowable limits.

Repair of cooking burners is an allowable H&S cost if CO readings are high and/or another H&S concern is found. Replacement of cook stoves is not an allowable cost.

Clients must be provided information and explanation of combustion safety and hazards information, including the importance of using exhaust ventilation when cooking and the importance of keeping burners clean to limit the production of CO.

## **Drainage – gutters, down spouts, extensions, flashing, sump pumps, landscapes, etc.**

Drainage repairs are allowed with H&S funds only as they relate to code compliance. A repair is allowed as incidental repair when it is a component of an efficiency measure but must be cost justified with the ECM(s).

Major drainage issues are beyond the scope of the WAP. Homes with conditions that may create a serious health concern and require more than incidental repair should be deferred. See Mold and Moisture bullet below.

What are major drainage issues?

- Where there is a need for excavating equipment
- Installing gutters on more than half the home is necessary
- When dirt is required to be moved in an area of more than 40 square feet

Clients must be provided information and explanation of the importance of cleaning and maintaining drainage systems, as well as the benefits of landscape design, if applicable.

### **Electrical (Not Knob-and Tube Wiring)**

Minor electrical repairs, under \$300, are allowed where health and safety of the occupant(s) is at risk. Upgrades and repairs are allowed when necessary to perform specific weatherization measures (such as relocating an electrical outlet to allow for a dryer to be relocated for proper ventilation or proper connection of an existing water heater). Other examples include but are not limited to: installing a GFCI in bathroom outlets; replacement of wall outlets that are broken; replacement of bad breakers.

Sub-grantees are required to discuss and provide information to the client on the hazards of overloading circuits, basic electrical safety/risks and over current protection, when applicable. H&S funds should not be used when the repair is a component of an ECM such as a service upgrade to handle increased load of a new HVAC system.

### **Electrical (Knob-and Tube Wiring)**

If Knob and Tube wiring is present in a home and cannot be replaced under an ECM (like insulation), that home will be a deferral until the wiring can be upgraded to current wiring codes. Sub-grantees are encouraged to seek all available programs to assist low-income households.

Sub-grantees are required to discuss and provide information to the client on the hazards of overloading circuits, basic electrical safety/risks and over current protection, if applicable.

### **Fire Hazards**

Current inspection criteria must take into account fire hazards associated with combustion appliances, including clearances and venting systems. Through fuel specific checklists, auditors identify such hazards and allow repairs accordingly, with respect to budgetary and program limitations. Adherence to appropriate NFPA codes when repairing or replacing equipment is a requirement, also it minimizes the potential for fire hazards.

Correction of fire hazards is an allowable cost when necessary to safely perform weatherization. Home evaluations include checking for fire hazards during the audit. Clients must be informed of any hazards observed, even if they will not be treated during weatherization work.

### **Formaldehyde, Volatile Organic Compounds (VOCs) and other Air Pollutants**

Formaldehyde and Volatile Organic Compounds (VOCs) – Formaldehyde, tobacco smoke, thinners, solvents, cleaners, and any other substances capable of negatively impacting indoor air quality must be identified during the initial audit. Basic strategies such as proper storage and ventilation are used to eliminate problems. Air sealing thresholds are maintained so that the presence of these pollutants are not concentrated and allowed to reach toxic levels. However, this is primarily the responsibility of the client. In some cases, deferral may be necessary.

Removal of pollutants is allowed and is required if they pose a risk to workers. If it is determined by the auditor that pollutants pose a risk to workers and removal cannot be performed or is not allowed by the client, the unit must be deferred. Removal of pollutants that

are not necessary to perform weatherization (e.g. cleaning old paint cans and oil out of the garages) is not allowed.

Clients must be informed of any conditions and/or associated risks observed. Client must be given written information on safety and proper disposal of household pollutants, if applicable.

### **Injury Prevention of Occupants and Weatherization Workers – Measures such as repairing stairs and replacing handrails**

Workers must take all reasonable precautions against work on homes that will subject workers or occupant(s) to health and safety risks. Minor repairs and installation may be conducted only when necessary to effectively weatherize the home; otherwise these types of measures are not allowed. The auditors and workers on a job are to observe if dangers are present that may prevent completion of the weatherization work. Clients must be informed by auditors and/or workers of observed hazards and associated risks, if applicable.

### **Lead Based Paint**

The cost of lead paint abatement is not allowable. However, the cost to test building materials for the presence of lead paint and the cost of taking precautions needed to prevent causing a lead paint contamination problem while weatherizing, is allowable. Lead-based paint (LBP) was used on the majority of houses built before 1978. It is probable that LBP is present on houses weatherized by the WAP that were built before 1978. If lead-based paint may be disturbed (cut, scraped, sawn, drilled, etc.) during the weatherization work, that work shall be done in a "lead-safe" manner. Arizona will follow the approach that has been defined by the Environmental Protection Agency (EPA) under their Lead Renovation, Repair, and Painting Rule.

Read about lead-hazard information for renovation, repair and painting activities in the EPA lead hazard information pamphlet:

<https://www.epa.gov/sites/production/files/documents/renovaterightbrochurebwlandscapesep2011.pdf> | In Spanish:

<https://www.epa.gov/sites/production/files/documents/renovaterightbrochure-esp-bw-landscape.pdf>

All sub-grantees are required to provide a copy of "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools" to an adult occupant prior to work starting on the home. The auditor will also conduct a client education segment as part of the initial inspection to ensure that the occupants are fully aware of the hazards posed by lead based paint exposure. This procedure is documented by a written acknowledgement that the adult occupant has received the brochure and that the information was not only distributed, but also explained, or certify in writing that a brochure had been delivered to an adult occupant and the provider has been unsuccessful in obtaining a written acknowledgement, as directed in the publication. Confirmation of receipt of this brochure by the client will be maintained in the client file.

State policy mandates all workers on site on any weatherization project, whether they be a crew based employee of one of the sub-contractors or a private sector contractor, must complete an  
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eight (8) hour Lead Safe Worker Practices Workshop. New staff will be required to attend the training within 180 days of their start date of employment in the WAP. The aim of this course is to inform the worker about lead hazards and the proper ways to deal with them. All crews and contractors are required to carry a High-Efficiency Particulate Air (HEPA) vacuum, respirators, disposable bio suits, and follow all other safe lead work practices, including:

- Wear a tight fitting respirator and disposable coveralls.
- Seal work areas within a home with tape and plastic. Cover furniture, carpet, and other surfaces with plastic drop cloths or tarps.
- Spray water on disturbed areas to minimize dust.
- Clean-up work area each day. Sweep carefully and wet mop, as needed. Use a HEPA vacuum cleaner to collect dust and paint chips.
- Keep children away from work area at all times.

While this represents only a summary of the overall Lead Safe Practices and training, it illustrates ADOH WAP awareness of the issue and how it is essential to any weatherization project.

Because Lead Safe Weatherization work practices only occur due to health and safety concerns and cannot be considered as part of an efficiency measure, it shall always be calculated and charged as an H&S cost.

ADOH WAP monitoring staff will have oversight responsibility in this area. While lead safe work practices have long been built into the program, the monitors will focus more directly on this area as they conduct their monitoring visits. Sub-grantees will be required to show that all lead based paint protocols: information sharing, lead safe work practices, proper equipment, etc. are up to date and in compliance to all regulations. While monitoring, if ADOH WAP finds the sub-grantee performing weatherization services without working lead safe practices on a home built prior to 1978 the sub-grantee will be written up. The sub-grantees that are not in compliance will be required to attend the WAP Boot Camp Course, offered by the Southwest Building Science and Training Center (SWBSTC), which includes Lead Safe Weatherization (LSW) information. Failure to comply and correct their practices for lead safe weatherization could result in reduced allocation or termination of ADOH WAP contract with the sub-grantee.

Sub-grantees must follow EPA's lead; Renovation, Repair and Painting (RRP). In addition to RRP, ADOH WAP requires all weatherization crews working in pre-1978 housing to be trained in LSW. Arizona's Deferral Policy will be used in instances where the homeowner or landlord has notified the sub-grantee of lead paint issues existing; where lead poisoning has occurred to a member of the household; or when the extent and condition of lead-based paint in the house would potentially create further health and safety hazards. This policy requires possible referral to other programs

Arizona's current status is as follows: all sub-grantees have applied for and received Lead Renovator Firm status. All auditors have acquired Lead Renovator Certification (RRP) as well as select crew leaders. Additionally, private contractors (excluding HVAC and Plumbers) have

also applied for and received Lead Renovator Firm status, as required by ADOH WAP. Private contractors have also met the requirement of having adequate RRP certified employees. Arizona met the EPA requirements by the April 2010 deadline. As new contractors apply to work on ADOH WAP projects, the EPA requirements are explained during the application process. No private contractors will be awarded work on any pre-1978 dwellings that don't meet the EPA rules.

Private contractors will be required to furnish proof of RRP and Lead Renovator Firm status as a condition of working for the ADOH WAP program. The ADOH WAP staff will routinely check that documentation is on file at each agency verifying compliance to EPA rules.

All weatherization crews working on pre-1978 homes must receive the 8 hour LSW training and a certified renovator must be assigned to the project and be readily available.

ADOH WAP Monitor(s)/Trainer(s) must be certified renovators and receive the 8 hour LSW training.

An adult of each household of every home to be weatherized receives the informational pamphlet: "Renovate Right". The inspector also conducts a client education segment as part of the initial inspection to assure that the occupant(s) understand the hazards posed by lead based paint exposure.

The RRP requirements of client education apply. The agencies must give the client a copy of the EPA publication: September 2011 Edition of: *The Lead-Safe Certified Guide to Renovate Right Pamphlet* and have the client must sign off that the pamphlet was received. The signed form must be kept in the client file.

The certified renovator must be physically present at the work site while signs are being posted, containment is being established, and the work area is being cleaned after the renovation to ensure that these tasks are performed correctly. Although the certified renovator is not required to be on-site at all times, a certified renovator must direct the work being performed to ensure that the work practices are being followed correctly. When a certified renovator is not physically present at the work site, the workers must have access to contact the renovator. The certified renovator must perform the post-renovation cleaning verification.

### **Mold and Moisture**

The WAP does not encompass mold remediation. WAP funds are not to be used to test, abate, remediate, purchase insurance, or alleviate existing mold conditions identified during the assessment, the work performance period or the quality control inspection. Where multiple funding sources are used, the performance of any of the aforementioned activities must be expensed to a non-DOE funding source. Most typically, weatherization services may need to be delayed. All local agencies must include some form of notification or disclaimer to the client upon the discovery of a mold condition and if corrected, what was specifically done to the

home that is expected to alleviate the condition and/or that the work performed should not promote new mold growth.

Where existing mold could pose a health risk to both the occupants and the weatherization crew, DOE funds may be used to correct energy-related conditions and/or to assure the immediate health of workers and clients. No more than 16 square feet of water damage repairs can be addressed by weatherization workers if it is in connection with the correction of moisture and mold creating conditions that are allowed when necessary in order to weatherize the home and to ensure the long term stability and durability of the measures. Weatherization of a home, and air-sealing in particular, could potentially increase the risk of moisture and mold in a home, resulting in structural damage and/or a health risk to the occupants, extreme caution should be taken not to increase mold or moisture issues when weatherization work is performed. Where severe Mold and Moisture issues cannot be addressed, deferral is required.

In Arizona the following protocols have been adopted to ensure that these risks are minimized during weatherization.

### **A) Moisture Assessment**

All homes should be checked for previous or existing moisture problems. Mold issues in homes arise from conditions of excess moisture. During the initial audit, auditors must assess the homes with special attention to the following signs: evidence of condensation on windows and walls indicated by stains or mold; standing water; water stains; if supply or waste pipes are leaking; if attic roof sheathing shows signs of mold or mildew; etc. Identification of any existing or potential moisture problems shall be documented in the client file.

If existing moisture problems are found, no air sealing should be done unless the source of the moisture can be substantially reduced or effective mechanical ventilation can be added to, cost effectively, remove the moisture. In some cases, air sealing must be done in order to reduce the source of the moisture (i.e. sealing off crawlspaces from the house, or sealing attic leakage to eliminate condensation on the roof deck). Because air tightening may cause an increase in relative humidity, client education should include information about moisture problems and possible solutions. Any low-cost measures that help reduce the humidity levels in the house should be installed. Some examples of these low-cost measures include but are not limited to:

- Venting dryers
- Venting existing bath exhaust fans
- Venting existing kitchen exhaust fans

### **B) Repair or Elimination of Moisture Problems**

Repair of moisture problems that might result in health problems for the client, damage the structure over the short-term or long-term, or diminish the effectiveness of the weatherization measures must be done before the job is completed. Moisture problems can be reduced or eliminated by controlling the source of the moisture. Some examples of these measures include but are not limited to:

- Venting dryers to the outside of the building;

- Providing positive drainage away from foundation (unless only a small area needs to be addressed, regarding the foundation perimeter which is not allowed);
- Repairing small roof leaks and flashing issues
- Educating the client about the sources of moisture that they can control.
- Moisture problems can be reduced or eliminated by ventilating areas where excessive moisture is produced, such as bathrooms and kitchens. This should include installation of a high quality exhaust fan in the subject area and informing the client of the related moisture issues and the proper operation and use of the fan.

Major moisture problems that cannot be corrected within the scope of the program include, but are not limited to:

- An enclosed crawlspace or basement that has standing water for 24 hours due to inadequate ground or surface water drainage.
- Any building with no overhangs and no gutters, exhibiting signs of major moisture problems such as blistering paint and extensive mold/mildew on the inside of the house.
- Needing to regrade foundation perimeter to create opposite water flow away from the foundation

The clients must be provided with a disclaimer on mold and moisture awareness.

The EPA publication, "A Brief Guide to Mold, Moisture, and Your Home", is available in [HTML](#) and PDF formats in English ([PDF](#), 20 pp., 257 K) and Spanish ([PDF](#), 20 pp., 796 K). The Guide provides information and guidance for homeowners and renters on how to clean up residential mold problems and how to prevent mold growth.

### **Occupational Safety and Health Administration (OSHA) and Crew Safety**

Workers must follow OSHA standards and OSHA Hazard Communication Standard (HCS) Safety Data Sheets (SDS) and take precautions to ensure the health and safety of themselves and other workers. SDS must be posted wherever workers may be exposed to hazardous materials. SDS information is monitored during ADOH WAP compliance monitoring. Field monitoring performs client file review for evidence of safe work practices.

OSHA 10-hour training is required for all workers, including contractors, assessors, and inspectors. OSHA 30-hour training is required for all crew leaders and ADOH WAP monitor(s) and trainer(s). All new employees must obtain OSHA 10 or OSHA 30, depending on their position, within 180 days of employment. Any accredited training can be obtained. Below are some suggestions:

#### **Classroom Training for OSHA 10 and OSHA 30:**

1. Southwest Building Science Training Center (SWBSTC)

**Online Training:** (OSHA has accepted the below sites for online outreach training. We suggest that you sample them before choosing.)

#### **Construction 10 hour**

Revised April 12, 2016

1. [Advance Online](#)
2. [Click Safety](#) (also Roadway, Cal-OSHA, and Spanish)
3. [Summit Training Source](#) (also Spanish version)
4. [Pure Safety](#) (also Spanish version)
5. Career Safe - ([Youth](#) and [Corporate](#) versions)
6. [Redvector](#)
7. [360Training](#)
8. [University of South Florida](#)
9. [Coastal Training Technologies](#)
10. [Turner Construction](#)

#### **Construction 30 hour**

1. [Turner Construction](#) (also Spanish version)
2. [Click Safety](#)
3. [360Training](#)
4. [Summit Training Source](#)
5. [University of South Florida](#)
6. [Pure Safety](#)
7. [Advance Online](#)

For other Information on obtaining OSHA classes by an authorized OSHA Outreach Trainer try:

- A. See: [www.OutreachTrainers.org](http://www.OutreachTrainers.org) to find outreach trainers and/or their schedules
- B. OSHA Education Center: [www.osha.gov/dte/edcenters/map.html](http://www.osha.gov/dte/edcenters/map.html)
- C. The OSHA Consultation office:  
[www.osha.gov/dcsp/smallbusiness/consult\\_directory.html](http://www.osha.gov/dcsp/smallbusiness/consult_directory.html)

#### **Pests**

If any pest infestation is found within the dwelling or in any area outside of the dwelling where workers would have to be in order to perform weatherization work, pest control is an allowable expense. The cost of pest control cannot exceed \$300. If the cost is greater than that amount, the home will need to be deferred until the problem is resolved. (Pests include, but are not limited to: fleas, roaches, rodents, etc.). Clients must be informed of condition observed and the risks associated.

#### **Radon**

Whenever site conditions permit, exposed dirt must be covered with a vapor barrier except for mobile homes without skirting or an exterior under surface that serves as a vapor barrier. In homes where radon may be present, precautions should be taken to reduce the likeliness of making radon issues worse. In extreme cases deferral may be required.

In the state of Arizona, Radon testing or remediation is not an allowable H&S measure. Clients must be provided with the EPA consumer's guide to Radon located at:

[https://www.epa.gov/sites/production/files/2016-02/documents/2013\\_consumers\\_guide\\_to\\_radon\\_reduction.pdf](https://www.epa.gov/sites/production/files/2016-02/documents/2013_consumers_guide_to_radon_reduction.pdf)

## Refrigerant

Refrigerators are allowed to be replaced as an ECM only. All reclaimed refrigerant processes must follow the Clean Air Act 1990, Section 608, as amended by 40 CFR 82, 5/14/93. All EPA testing protocols must apply to any testing. Clients are to be advised not to disturb refrigerant. Anyone working with refrigerant within or employed by the WAP must have the appropriate training; either an EPA approved Section 608 Type I or universal certification. For any appliance containing refrigerant, disposal must include refrigerant reclamation.

Non-certified technicians may not attach or disconnect hoses of gauges to measure pressure within the appliances; top-off or remove refrigerant from appliances; or otherwise damage the integrity of the appliance.

## Smoke, Carbon Monoxide Alarms, and Fire Extinguishers

1. All homes must have a CO detector installed per ASHRAE 62.2-2013 standard
2. WAP agencies must install smoke alarms in dwelling units where these devices are non-existent or non-functioning.
3. CO alarms must be, UL listed, installed in accordance with the manufacturer's recommendations and located in compliance with state and local building codes and must have the capability to accurately detect and display low levels of carbon monoxide to 10 ppm and comply with other program requirements.

Local agencies must provide the occupants of the dwelling unit with verbal and written information regarding the following:

- A. Dangers of CO and smoke.
  - B. How to operate and reset the CO and smoke alarms.
  - C. How to read the CO alarm if there is a digital display.
  - D. How to respond to CO levels above 10 ppm.
    - The most common symptoms of CO poisoning are headache, dizziness, weakness, nausea, vomiting, chest pain, and confusion.
    - If these symptoms are present shut off gas appliances, open windows and doors, get out of the home, seek medical help (if needed) and call a repair man.
  - E. How to change the batteries of CO and smoke alarms.
4. Smoke alarms must be, installed in accordance with the manufacturer's recommendations, listed in accordance with UL 217, comply with NFPA 72 and other program requirements.
  5. Where multiple smoke alarms are required interconnection is required. Activation of any one smoke alarm shall activate all of the alarms in the individual unit. Hard wiring and interconnection is not required in existing areas provided:
    - A. The alteration or repair does not cause the removal of wall or ceiling finishes exposing the structure, and
    - B. No attic, crawl or basement is available which can provide access for hard wiring and interconnection without the removal of interior finishes.

6. On average no more than two smoke alarms will be installed in home unless a permit is pulled and code compliance for the municipality the home is located in states differently.
7. Providing fire extinguishers is allowed only when solid fuel is present. Fire extinguishers must be installed according to the manufacturer's recommendations; be type ABC, UL listed, ≤ 10lb and with a permanently affixed wall bracket to receive the extinguisher. The client must sign a written agreement to allow a fire extinguisher to be installed in the home within sight of the solid fuel burning heat system when standing at the unit. The agency must discuss and provide information on the use and upkeep of the extinguisher to the client.

### **Solid Fuel Heating (Wood Stoves, etc.)**

The weatherization agency must inspect the stove, chimney and flue for proper operation. Combustion Zone depressurization (CAZ) testing is required per WAP standards.

Maintenance, repair and replacement of primary indoor heating units is allowed where occupant health and safety is a concern. Maintenance and repair of secondary heating units is allowed. Replacement of secondary heating units is not allowed. This system must be operational and inspected before any other WAP work begins.

### **Stand Alone Electric Heaters**

Stand-alone electric heaters are defined as heaters that do not have a permanent connection to electric power and/or stand-alone heaters that have been connected to the power supply against code. Repair, replacement or installation is not allowed. Removal is recommended. Circuitry must be checked to ensure adequate power supply for existing space heaters by a licensed electrician.

Clients must be informed of the hazards associated with these types of heaters and the WAP agency must collect a signed waiver from the client if removal is not allowed.

### **Space Heaters, Unvented Combustion**

Unvented combustion space heaters are not considered a primary heat source. Removal is required, except as secondary heat source and where the unit conforms to ANSI Z21.11.2. Units that do not meet ANSI Z21.11.2 must be removed prior to weatherization but may remain until a replacement heating system is put in place. Testing for air-free carbon monoxide (CO) is an allowable expense per WAP standards. All units must have an ANSI Z21.11.2 label.

The client must be informed of the dangers of unvented space heaters (CO, Moisture, NO<sub>2</sub>) can be dangerous even if the CO alarm does not sound. The replacement system must be inspected, operational and combustion tested per WAP standard test protocols before any other weatherization begins.

## Space Heaters, Vented Combustion

These units will be treated as furnaces and test in the same manner as furnaces during an evaluation. The replacement system must be inspected, operational and combustion tested per WAP standard test protocols before any other weatherization begins.

## Spray Polyurethane Foam (SPF)

Use EPA recommendations (available online at: <https://www.epa.gov/saferchoice/quick-safety-tips-spray-polyurethane-foam-users>) when working within the conditioned space of when SPF fumes become evident within the conditioned space. When working outside the building envelope, isolate the area where foam will be applied, take precautions so that fumes will not transfer to inside conditioned space, and exhaust fumes outside the home. Testing will include checking for penetrations in the building envelope. Sensory inspection inside the home for fumes during foam application must also occur.

The client must be informed of plans to use two-part foam and precautions that may be necessary. Workers using foam products must receive training on the proper use of these various products and understand the specification for each application type. Documentation of installers viewing an installation video or online training and verification of reading and understanding product use information must be kept at the Sub-grantee agency. SDS are mandatory for any foam product used and a thorough understanding of the temperature sensitivity of the product in use is required.

## Ventilation

Arizona follows ASHRAE 62.2-2013 to the fullest extent possible. ASHRAE 62.2 evaluation, fan flow and follow up testing are required to ensure compliance. Sub-grantees or their contractors should have ASHRAE 62.2 training including proper sizing, evaluation of existing and new systems, depressurization tightness limits, critical air zones, etc. to ensure installation of ventilation measures meet ASHRAE 62.2-2013 compliance.

During the health and safety audit, Sub-grantees should provide clients with information on the function, use and maintenance of the ventilation system and its components. Sub-grantees should include a disclaimer during the education of the client that ASHRAE 62.2 does not account for high polluting sources and does not guarantee indoor air quality. Sub-grantees can document this client education on the Health and Safety Auditor Form available from the ADOH website at: <https://housing.az.gov/documents-links/forms/weatherization>. The form should be completed by the auditor, discussed with and signed by the client and the auditor and a copy maintained in the client file.

## Window and Door Replacement, Window Guards

Replacement, repair or installation of doors, windows, or window guards is not an allowable H&S cost. These measures may be allowed as an ECM if cost is justified. If disturbing lead paint, follow LSW practices and the client must be informed on lead risks as indicated in this H&S plan when applicable. Window Glass pane is an allowable cost if it is an immediate danger to occupants if budget permits

## Deferrals/Referrals

Deferrals, Referral and/or "walkaways" must be processed accordingly:

- A. The client shall be informed in writing as to why the dwelling cannot be weatherized. If there are conditions that the client must correct before service is available, those conditions must also be stated in writing.
- B. The service provider is required to refer the client to any alternate program such as home rehab, if one is available in the area.
- C. The service provider shall clearly indicate in the client file why the dwelling was given "deferral" status.
- D. The service provider must document all referrals to other programs or services in the client file.
- E. The client will receive any information prescribed in the H&S section that is appropriate.

## Client Education

Sub-grantees must take every opportunity to educate clients regarding the use and maintenance of systems in their home as well as inform them (through discussion and written materials) of the presence of any hazards including but not limited to: asbestos; biologicals; unsanitary conditions; combustion gases; building structure; roofing; code compliance; electrical; fire hazards; Volatile Organic Compounds (VOCs) and other air pollutants; mold, lead paint; pests; radon; smoke and carbon monoxide detectors; Spray Polyurethane Foam (if applicable); space heaters; and ventilation. Documentation of client education may be proven by completion of three forms available from the ADOH WAP website at: <https://housing.az.gov/documents-links/forms/weatherization>.

1. Client Health and Safety Evaluation Form - CLIENT
2. Client Health and Safety Evaluation Form – AUDITOR
3. Weatherization Assistance Program Disclosure/Release Form (Hazard Disclosure Form)

These forms must be completed and signed by the appropriate parties (client and auditor) and a copy retained in the Client File.