Housing Unit Ownership Information

1. Rental: ○ Yes ○ No Owner Occupied: ○ Yes ○ No a. Year built: _____ b. Years at address: _____

Health & Safety

2. Sanitary Problems to be addressed: ☐ Plumbing ☐ Septic ☐ Animal Waste ☐ Other

3. Indoor Air Quality problems: ○ Yes ○ No → ***IF yes see Pollution Source Survey***
4. Knob and Tube inspection needed: ○ Yes ○ No Location of panel: _____
5. Electrical Repairs needed: ○ Yes ○ No
6. Install/repair ventilation system: ○ Yes ○ No _____
7. Accessibility repairs needed: ☐ Handrail ☐ Steps ☐ Other _____

Comfort/Infiltration

8. Install door weatherstrip kits: ○ Yes ○ No Location: _____
9. Window repair or replacement: ○ Yes ○ No _____
10. Door replacement: ○ Yes ○ No LH/RH Jamb: ○ Inswing ○ Outswing
    Add Deadbolt: ○ Yes ○ No Add peephole: ○ Yes ○ No
11. Mobile Door Replacement: ○ Yes ○ No LH/RH Jamb: ○ Inswing ○ Outswing
12. Air sealing Goal CFM50: _____
13. Air sealing Opportunities:

Other:

Durability

14. Moisture Problems Exist: ○ Yes ○ No Source _____
15. Roof Repairs Needed: ○ Yes ○ No Location _____
16. Repair Gutters: ○ Yes ○ No Location _____
    Add splash blocks: ○ Yes ○ No
17. Pest infestation present: ○ Yes ○ No Location of damage _____

Other:

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Heating System

18. Electric baseboard or wall heaters? ○ Yes ○ No
19. Electric forced air with ducts? ○ Yes ○ No
20. Electric Radiant? ○ Yes ○ No
21. Clean air handler fan? ○ Yes ○ No
22. Replace furnace filter? ○ Yes ○ No
23. Install CO detector? ○ Yes ○ No
24. Install Smoke alarm? Type? ○ Yes ○ No
25. Duct Sealing Opportunities ○ Yes ○ No
26. Natural Gas forced air with ducts? ○ Yes ○ No
27. Natural Gas Space Heater? ○ Yes ○ No
28. Oil forced air with ducts? ○ Yes ○ No
29. Oil space heater? ○ Yes ○ No
30. ☐ Fireplace ☐ Woodstove ○ Yes ○ No
31. Chimney needs cleaning? ○ Yes ○ No
32. Install Thermostat? ○ Yes ○ No
33. Pressure Balancing ○ Yes ○ No

Other:

Hot Water Heating

34. Electric? ○ Yes ○ No Location .....
35. Natural Gas & Propane? ○ Yes ○ No Location .....
36. Install insulation blanket? ○ Yes ○ No Wrap 1st 6' of hot and cold water pipe? ○ Yes ○ No
37. T & PRV to be vented out? ○ Yes ○ No

Other:

Walls

38.. Area: ..... ft^2 Existing R value: ..... Siding Type: .....
Add R value: ..... Insulation Type: ..... Lbs .....
Location: .....

39. Dense Pack Technique, minumum 3.5 lbs per cubic ft., minimum blower pressure of 80" WG.: ○ Yes ○ No

40. Knee Walls to Insulate: ○ Yes ○ No Location: .....
Area: ..... ft^2 Existing R-Value: .....

Knee Walls to Insulate: ○ Yes ○ No Location: .....
Area: ..... ft^2 Existing R-Value: .....

Knee Walls to Insulate: ○ Yes ○ No Location: .....
Area: ..... ft^2 Existing R-Value: .....

Knee Walls to Insulate: ○ Yes ○ No Location: .....
Area: ..... ft^2 Existing R-Value: .....

41. Weatherstrip & or Repair knee wall access: ○ Yes ○ No ***IF yes see attached sketch***
Location: .....

Other:

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Attic A

42. Attic Type: ☐ Vaulted ☐ Flat ☐ Cathedral ☐ Trussed with Pitched Roof ☐ Mobile
Existing Insulation Area ..... ft² R-value: ..... Type .....
Add Insulation Area ..... ft² R-value: ..... Type ..... Settled Density .....

43. Existing Low Venting: Area ..... in² Type ..... Size ..... Rescreen? ○ Yes ○ No
Add Low Venting: Area ..... in² Type ..... Size .....

44. Existing High Venting: Area ..... in² Type ..... Size ..... Rescreen? ○ Yes ○ No
Add High Venting: Area ..... in² Type ..... Size .....

45.

Roof Style?	**Roof Pitch?**	**Roof Type?**	**Roof Condition?**
☐ Dutch Hip	☐ Flat	☐ Composition	☐ Good
☐ Gable	☐ -4/12	☐ Tar	☐ Fair
☐ Hip	☐ 4/12	☐ Metal	☐ Poor
☐ Shed	☐ 6/12	☐ Wood Shake	☐ Unsafe! Stay Off Roof!
☐ Cape Cod	☐ 8/12+	☐ Other	

46. Damming, indicate # of each? Chimney ..... Recessed Lights ..... Fan Pipe ..... Doorbells .....
47. Ducting to Insulate ○ Yes ○ No Lineal ft ..... Size: .....
48. Existing fans to vent out: .....
Other:

Attic B

49. Attic Type: ☐ Vaulted ☐ Flat ☐ Cathedral ☐ Trussed with Pitched Roof ☐ Mobile
Existing Insulation Area ..... ft² R-value: ..... Type .....
Add Insulation Area ..... ft² R-value: ..... Type ..... Settled Density .....

50. Existing Low Venting: Area ..... in² Type ..... Size ..... Rescreen? ○ Yes ○ No
Add Low Venting: Area ..... in² Type ..... Size .....

51. Existing High Venting: Area ..... in² Type ..... Size ..... Rescreen? ○ Yes ○ No
Add High Venting: Area ..... in² Type ..... Size .....

52.

Roof Style?	**Roof Pitch?**	**Roof Type?**	**Roof Condition?**
☐ Dutch Hip	☐ Flat	☐ Composition	☐ Good
☐ Gable	☐ -4/12	☐ Tar	☐ Fair
☐ Hip	☐ 4/12	☐ Metal	☐ Poor
☐ Shed	☐ 6/12	☐ Wood Shake	☐ Unsafe! Stay Off Roof!
☐ Cape Cod	☐ 8/12+	☐ Other	

54. Damming, indicate # of each? Chimney ..... Recessed Lights ..... Fan Pipe ..... Doorbells .....
55. Ducting to Insulate ○ Yes ○ No Lineal ft ..... Size: .....
56. Existing fans to vent out: .....
Other:

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Underfloor Area A

57. Floor Type: ☐ Slab on Grade ☐ Unheated Basement ☐ Crawlspace Area: ..... ft² Existing R value: .....
Existing Insulation Type: .....

58. Retrofit Application: ☐ Stuff Floor ☐ Perimeter ☐ Blow Belly Area: ft² Add R-value:
New Insluation Type: .....
Joist Size: .... On Center

59. Add 6 mil. Poly vapor barrier? ○ Yes ○ No ..... ft²

60. Tyveck area for client use? ○ Yes ○ No ..... ft²

61. Crawlspace has standing water or signs of standing water? ○ Yes ○ No

62 Existing Venting: ..... in² Type: ..... Size: .....

63. Add venting: ..... in² Type: ..... Size: .....

64. Rescreen? Install removeable covers? ○ Yes ○ No

65. Crawlspace access: ☐ Inside ☐ Outside Repair & Secure Access? ○ Yes ○ No

66. Ducting to insulate? ○ Yes ○ No Lineal ft: ..... Duct Size: .....

67. Wrap water pipes? ○ Yes ○ No 1/2" Lineal ft ..... 3/4" Lineal ft ..... 1" Lineal ft .....

68. Dryer vent to repair or install? ○ Yes ○ No Repair needed? ..... Size:

69. Heat Tape to remove? ○ Yes ○ No

Other:

.....

.....

Underfloor Area A

70. Floor Type: ☐ Slab on Grade ☐ Unheated Basement ☐ Crawlspace Area: ..... ft² Existing R value: .....
Existing Insulation Type: .....

71. Retrofit Application: ☐ Stuff Floor ☐ Perimeter ☐ Blow Belly Area: ft² Add R-value:
New Insluation Type: .....
Joist Size: .... On Center

72. Add 6 mil. Poly vapor barrier? ○ Yes ○ No ..... ft²

73. Tyveck area for client use? ○ Yes ○ No ..... ft²

74. Crawlspace has standing water or signs of standing water? ○ Yes ○ No

75. Existing Venting: ..... in² Type: ..... Size: .....

76. Add venting: ..... in² Type: ..... Size: .....

77. Rescreen? Install removeable covers? ○ Yes ○ No

78. Crawlspace access: ☐ Inside ☐ Outside Repair & Secure Access? ○ Yes ○ No

79. Ducting to insulate? ○ Yes ○ No Lineal ft: ..... Duct Size: .....

80. Wrap water pipes? ○ Yes ○ No 1/2" Lineal ft ..... 3/4" Lineal ft ..... 1" Lineal ft .....

81. Dryer vent to repair or install? ○ Yes ○ No Repair needed? ..... Size:

82. Heat Tape to remove? ○ Yes ○ No

Other:

.....

.....

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Environmental Hazard Survey

Clients & Residents

Family Members less than 6 years of age: How many Over 60 years: How many

Asthma: How many _____

Respiratory Problems: How many _____

Flu-Like Symptoms: How many _____

Is anyone Pregnant: How many _____

Lead

Is there peeling/flaking/chipping paint on **interior** walls, ceilings, windows, floors? Yes

If so, where: _____

Is there peeling/flaking/chipping paint on **exterior** walls, ceilings, windows, floors? Yes

If so, where: _____

Moisture / Mold

Has the carpet ever been water soaked? Yes When? How long ago

Is the carpet on top of a concrete floor? Yes _____

Seasonal pooling of water in a crawl space or basement? Yes _____

Water leaks or stains on ceilings, walls, attic, basement? Yes _____

If so, identify source: _____

Moisture on Windows? Yes Which Season, Which Windows? _____

_____

Is there visible mold? Yes Where? _____

Square Ft of mold? _____

Identify the obvious source. _____

House Temperature unusually warm or cold? Yes _____

Record location of humidity > 60% (use digital hygrometer). _____

Pets

Indoor pets? Yes Type & number : _____

Where do they sleep? _____

Carbon Monoxide

Unvented combustion appliances in the home? Yes _____

Cars parked in attached garage? Yes _____

CO detectors present? Yes _____

Dust

Noticeable dust? Yes Locations? _____

Rooms with Clutter that make removing dust difficult? Yes _____

_____

Walk off mats or devices to reduce current dust loading? Yes _____

_____

Floor covering in bedrooms of residents with respiratory issues? Yes _____

Pests (cockroaches, mice etc.)

Noticeable cockroaches (urine stains, droppings, roaches). Yes Note location: _____

_____

Noticeable mice or rodents (urine stains, droppings, animals seen) . Yes Note location: _____

_____

Pesticides or rodenticides used. Yes Note location: _____

_____

Toxics

Paints, solvents, thinner or pesticides stored in home? Yes Note location: _____

_____

House tested for radon? Yes If yes, record results. _____

Smoking

Does anyone in the home smoke? Yes _____

If yes are there children in the home? Yes _____

Relative Humidity Gauge Log

This log is designed for you to record your Relative Humidity levels in the home. Remember that ideally the level should be kept between 40-50%.

Date	Time	Room	Humidity Reading %

Weatherization Audit Trail

Audit Trail: Comments by the Project Coordinator regarding the scope of work detailed on the previos 6 pages should be documented here. Deviations from the scope of work should be detailed here by the lead technician responsible for the installation of measures.
Please initial and date all comments.

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Lead Safe Work Written Compliance Worksheet

THIS PORTION TO BE FILLED OUT BY ASSESSOR

Client: _____ Date _____

Name of assessor _____ Year house was built_____

Which of the following types of evaluations was performed on this house? (Circle one)
1) Risk Assessment 2) Surface by surface evaluation 3) No evaluation – presume lead

NOTE: If the house was built before 1978 but testing of paint has not taken place, then the presence of lead must be presumed for all surfaces that will be disturbed and lead safe work practices used.

If a report was written, is there a copy in the client file? **Y or N**

THIS PORTION TO BE FILLED OUT BY LEAD TECHNICIAN

Name of Lead Technician _____ Date _____

Enter the following information for each task that will require lead safe work practices:

Task	Technician(s)	Date(s) Start / End	Tools, materials, engineering controls used , and technologies considered in meeting the PEL	Respiratory protection and protective clothing to be used.
1				
2				
3				
4				
5				
6				

NOTE: Only HEPA filtered vacuuming is allowed for dust clean up. Using compressed air or dry sweeping to remove dust is prohibited.

Will administrative controls be used to limit employee exposure? (Y/N) If so, list by task number, duration and level of exposure for each technician_____
_____
_____

Describe facilities, equipment, and methods that will be used to decontaminate workers upon completion of tasks. _____
_____
_____
_____

Indicate designated clean area for taking breaks and lunch _____

List steps taken to protect client / bystanders from exposure to lead dust: _____
_____
_____
_____
_____

Air monitoring data :

Task number	Ug/ m3 (8hr. TWA)	mg/cm2 of paint	Estimated exposure (please cite objective data)

Provide the following information for each technician who will work on this job:

Technician	Training / Certifications	Medically monitored as per WISHA Yes or No

Competent person

_____ (Name), a certified lead abatement supervisor, will be onsite at all times and will act as the competent person for occupational health and safety issues. The lead supervisor license (or certificate) number is:_____. The lead supervisor will conduct daily inspections of the work areas to ensure that control measures, work practices, personal protective equipment, and hygiene facilities are used as prescribed in this document.

1 Add blank for technology considered in meeting the PEL
2 Add a blank for crew size

3 Add a blank estimated lead exposure

4 Add a blank for standard operating procedures- Manual removal, powered equipment removal or removal by cutting torch.

5 Add a blank for administrative controls Y/N If Y schedule

6 Add blank for clean area for breaks and lunch

7 Add a line that lead contaminated materials will not be air blown, dry swept, but HEPA vacuumed.

Ventilation Worksheet

Existing cfm50_____ Predicted Final cfm50_____Final cfm50 _____
Calculated Building Tightness Limit (BTL) _____ cfm50
BTL/n = _____ cfm required (via natural, mechanical or combination)

Y / N Pollution source survey completed? Attach survey
Y / N Ventilation strategy needed? See Pollution source survey lines: _____
The ventilation system or strategy is designed to:
__ Provide spot ventilation in bathroom or kitchen
__ Relieve pressure induced combustion safety problems
__ Provide additional outside air to meet or exceed BTL guidelines
__ Reverse the direction of air flow from Crawlspace WRT House
__ Other
Briefly describe system:

Exhaust devices (check all that apply)	optional **Worst Case Contributior** Pre	Post
_ Dryer ___Vent to outside ___Repair/replace vent ___Install dampered cap Spec/Materials:		
_ Kitchen ___ Vent to outside ___ Repair/replace fan ___ Install dampered cap h ___ Electrician needed Spec/Materials:		
fan installe Make _____ Model _____ *Flow _____ **_ Bath 1** ___ Install dampered roof cap ___ Install & exhaust thru roof ___ Replace existing fan ___ Install & exhaust thru wall Control: ___ Spring timer (2 wire) ___ 24 hr timer (3 wire) ___ Other control ___ Electrician needed Spec/Materials:		
fan installe Make _____ Model _____ *Flow _____ **_ Bath 2** ___ Install dampered roof cap ___ Install & exhaust thru roof ___ Replace existing fan ___ Install & exhaust thru wall Control: ___ Spring timer (2 wire) ___ 24 hr timer (3 wire)		

Combustion Safety

Appliance _____ HDL ___pa **intial** CAZ WRT outside ___p **final** CAZ WRT outside ___pa

The project coordinator will number in order the recommended steps to help reduce negative pressure in the specified combustion appliance zone
Briefly describe how to improve the worst case number:

Crew Lead to initia and date all measures completed

PC	Lead		Comment:
___	___	Duct sealing	_____
___	___	Down size exhaust	_____
___	___	Under cut doors/transfer grilles	_____
___	___	Add supply register to CAZ	_____
___	___	Reconfigure return side	_____
___	___	Add outside air opening to return side of furnace	_____
___	___	Isolate combustion appliance	_____
___	___	Damper supply registers in rooms remote from CAZ	_____
___	___	Install combustion air opening near appliance	_____
___	___	Install mechanical outside air supply system	_____
		Fan installed: Make/Model	_____
		Measured flow of new fan	_____ cfm
		Control installed	_____
		Recommended setting	_____

COMBUSTION SAFETY TEST REPORT

Customer Name

Technician Name

		Job#	
		Date	Date
		PRE	**POST**
1	Measure existing CAZ pressure (baseline), CAZ WRT outside		
2	Outdoor wind speed		
3	Outdoor temperature		
4	Combustion appliance zone, designate appliance _____	NA	NA
5	Is there a hazardous or unsafe condition?	Y/N	Y/N
6	Are there visible signs of vent pipe leaks or damage?	Y/N	Y/N
7	Is there the smell of gas or indication of fuel leak(s)?	Y/N	Y/N
	Worst case set-up test for combustion appliance zones. Refer to the Technical Support Document for worst case procedures	NA	NA
8	Measure CAZ WRT outdoors, Is the CAZ door **open** or **closed** (circle one)		
9	Was there flame roll-out of combustion equipment?	Y/N	Y/N
10	Did the equipment spill gases for more than one minute?	Y/N	Y/N
11	Did the flame change in the furnace when the air handler turned on?	Y/N	Y/N
12	After 5 min. measure the CO in the ambient air in the living space		
13	Measure the draft pressure in the vent of the combustion appliance Test the combustion appliance vent WRT CAZ		
	Minimum acceptable draft pressures, below 20°F -5pa, 20°to40° -4pa, 40°to60° -3pa, 60°to80° -2pa, 80°+ -1pa	NA	NA
14	Measure the CO in the exhaust gases of the vented appliance		
15	If the door of CAZ is closed - open it. If the door is open - close it. Open/closed. Combustion appliance vent WRT CAZ.		
16	Heat Rises: measure temperature across heat exchanger: supply plenum temp - return plenum temp		
17	Fireplace/wood stove zone worst case test: FPWSZ zone WRT outdoors Also document any vent pipe, chimney or clearance problems		
18	Measure the CO in exhaust gases of kitchen stove: Range top burner 1		
	burner 2 (after 5 min.)		
	burner 3 (after 5 min.)		
	burner 4 (after 5 min.)		
	oven (after 5 min.)		
	ambient CO after 15 minutes		
	ambient CO after 45 minutes if CO is over 5 ppm after 15 min.		
19	Return house to pretest conditions, Circle DONE when complete	DONE	DONE

Comments

Revised 4/17/03

Environmental Hazard Matrix

Address:_____ Occupant Name:_____
Date Unit Survey Completed:_____ Assessor Name:_____

Identify Client Health and Age by shading in appropriate boxes.
Make a checkmark (✓) if the problem appears in the room or area. Use the extra rows to identify hazards you notice. Put an asterisk (✱) above any rooms (s) where a child sleeps or plays. Circle (O) where you photograph a problem.

CLIENT & RESIDENT HEALTH			Asthma		Respiratory Problems		Flu		Anyone Pregnant							
AGE of CLIENTS			6 & under		Over 60											
PROBLEM		**Exterior**	**Porch**	**Entryway**	**Living Room**	**Dining Room**	**Kitchen**	**Bedroom 1**	**Bedroom 2**	**Bedroom 3**	**Bathroom 2**	**Basement**	**Attic Space**			
Lead Paint	Peeling															
	Flaking															
	Cracking															
Mold & Moisture	Carpet water soaked															
	Carpet on concrete															
	Seasonal Pooling in crawl space															
	Leaks Stains in ceiling floors, walls															
	Visible Mold															
	Temperature unusually cold															
	Elevated Humidity															
	Moisture on windows															
Pets	Cats															
	Dogs															
	Other															
	Sleep Inside															
Carbon Monoxide	Non-Vented Appliances															
	Cars Parked in Garage															
	NO CO Detectors															
Dust	Large amounts															
	Cluttered															
Pests	Cockroaches															
	Mice															
	Rats															
	Other															
	Urine/Droppings															
	Pesticides/Rodenticides															
Toxics	Paints/Solvents Stored															
Smoking	Smoker in House															

Energy Use Evaluation
First Home Visit

Client: _____ Date: _____
_____ Household size: ____
Family member attending _____
_____ _____

Bill Summary:

(1) Annual Energy Cost $ _____ (all fuels) (2) Annual Energy Cost $_____ (all fuels)
Avg. monthly baseload $_____/mo..___ Avg. monthly baseload $ _____/mo.
Cost to run appliances $ _____/yr. Cost to run appliances $_____/yr.
Cost to heat the house $ _____/yr. Cost to heat the house $_____/yr.
Heating Degree days _____ Heating Degree Days_____
BTU/sq.ft./Hdd _____ BTU/sq.ft./Hdd _____
_____ ____

Heating System: _____ _____
Primary Secondary
Thermostat type: manual /programmable
Thermostat setting:_____ vs. actual temp _____
Night time setting: _____When away: _____ No setback practiced _____
Zone heating utilized? ____ Vents uncovered? ____ Filter Clean?_____ Blower Clean?____
Comments:
_____ _

Water Heater: Age:_____Tank wrapped?_____ Pipes wrapped? _____
Measured water temp. ____ Dialed down?_____ Describe_____
Existing shower flow rate: _____GPM, New flowrate: _____GPM
Faucet aerators installed?_____ Any leaking faucets? _____
Comments:
_____ _

Refrigerators: Unit 1; How old? _____ Temp. in frig. _____? Temp. in freezer comp. _____?
Condition of gasket _____ Coils need cleaning? _____ Measured KW/hr _____
Heat from compressor allowed to escape? _____ Estimated cost _____/mo. Replace Y/N
Comment:
Unit 2; How old?_____ Temp. in frig. _____? Temp. in freezer comp._____?
Cond. of Gasket_____ Coils _____ Measured KW/hr _____ Estimated cost_____/mo.

Freezer: Type,_____ Size _____cu.ft., Measured Temp. _____
Adjusted thermostat? _____ Frost buildup? _____ Full .....Empty
Location: _____ Measured KW/hr. _____ Estimated cost$_____/mo.
Comment:

Dryer: How many loads per week? _____ Avg. time it takes to dry a load _____
Check lint screen____ Is exhaust venting properly connected? ____ free from obstructions?_____
Washer: Cold wash cold rinse, Warm wash cold rinse, Hot wash cold rinse
Does the spin cycle seem to work well for removing excess water before drying?
Comment:

Lighting: What lights do you use most often?_____ CFL s installed ? _____
1) How many hours per day? _____ existing watts? _____ new watts?_____
2) How many hours per day? _____ existing watts? _____ new watts?_____
3) How many hours per day? _____ existing watts? _____ new watts?_____
4) How many hours per day? _____ existing watts? _____ new watts?_____
5) How many hours per day? _____ existing watts? _____ new watts?_____
Comment:

Misc. Waterbeds_____ Well pumps_____ Plug in heaters____ Sump pump_____Other_____

Installed Low Cost Measures:
___Low flow shower head, _____Faucet aerator, ____Thermometer,
___Rope caulk, ___Compact flourescent(s), ____ PSE/BPC info. brochures
Comment:

Session Content Checklist:

0 Sponsor and Goals of program
0 Purpose of session
0 Benefits desired by family
0 Steps in process
0 Action plan
0 Partnership responsibilities
0 Followup

Action Plan agreed upon? yes or no
If no please identify barriers _____

DIAGNOSTIC TEST REPORT

Customer Name

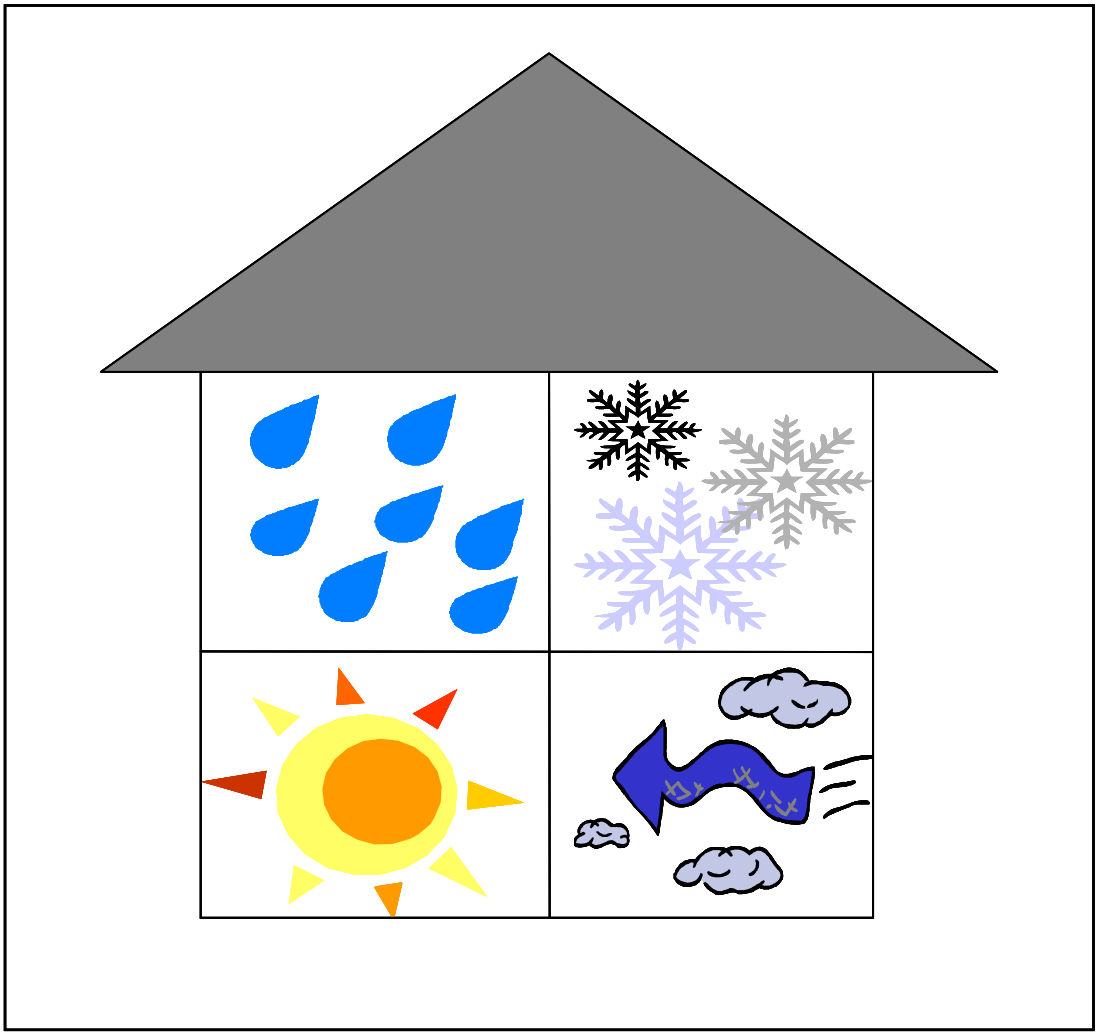
Technician Name

		Job#	
		Date	Date
		PRE	**POST**
1	Number of Occupants ___ x 15cfm x ___ n = BTL cfm50		NA
2	Number of Occupants ___ x 15cfm x ___ n = BTL cfm50		NA
3	Volume of conditioned living space _____ x .35 x ___ n / 60 = BTL cfm50		NA
4	Square feet of conditioned living space		NA
5	Calculated Building Tightness Limit = highest number of lines 1, 2, and 3		NA
6	Primary heat source(s) fuel type 1=Elec. 2=Nat. gas 3=Propane 4=Oil 5=Wood 6=Specify		
7	Secondary heat source(s) fuel type 1=Elec. 2=Nat. gas 3=Propane 4=Oil 5=Wood 6=Specify		
8	Pollution Source Survey completed	Y/N	NA
9	Home is being treated as Weatherization Plus Health	Level I	Level II
10	Combustion Safety Test(s) of all combustion appliance(s) completed	Y/N	Y/N
11	Windspeed MPH		
12	Outside temperature, record in degrees farenhiet		
13	Blower door location		
14	Baseline without blower door on in pa (stack)		
15	Blower door conf. O=open fan A = ring A B = ring B LF=low flo ring	A B LF	A B LF
16	Total CFM50		
17	Technician recommended BTL by: use, IAQ, exposure, diag. tests, etc.		NA
18	**ZONAL PRESSURES**	NA	NA
	ZONE	NA	NA
	1 ATTIC WRT HOUSE		
	2 CRAWLSPACE WRT HOUSE		
	3 GARAGE WRT HOUSE		
	4 OTHER WRT HOUSE		
	5 OTHER WRT HOUSE		
	6 OTHER WRT HOUSE		
	7 OTHER WRT HOUSE		
	8 OTHER WRT HOUSE		
19	Intended location of existing ducts A=Inside B=outside C=inside/outside		
20	**PRESSURE BLOCK TESTS (clockwise from front door, house WRT duct)**	NA	NA
	Number S=supply/R=return Zone # I=inside/O=outside	NA	NA
	1		

	6		
	7		
	8		
	9		
	10		
	11		
	Blower door off, HVAC fan on only	NA	NA
21	Dominant Duct Leak Test: Main Body WRT Outside (all interior doors open)		
22	Master Bed. Rm effect: Main Body WRT outside (MBR door shut)		
23	All doors closed Effect: Main Body WRT outside		
24	**HOUSE PRESSURE BALANCING, pressure in each room doors closed (room WRT main body, clockwise)**	NA	NA
	ROOM REPAIR	NA	NA
	1		
	2		
	3		
	4		
	5		
	6		
	7		
25	Duct declaration after repair A=inside B=outside C=inside/outside		
26	RETURN HOUSE TO PRE-TEST CONDITION (Circle if complete)	DONE	DONE

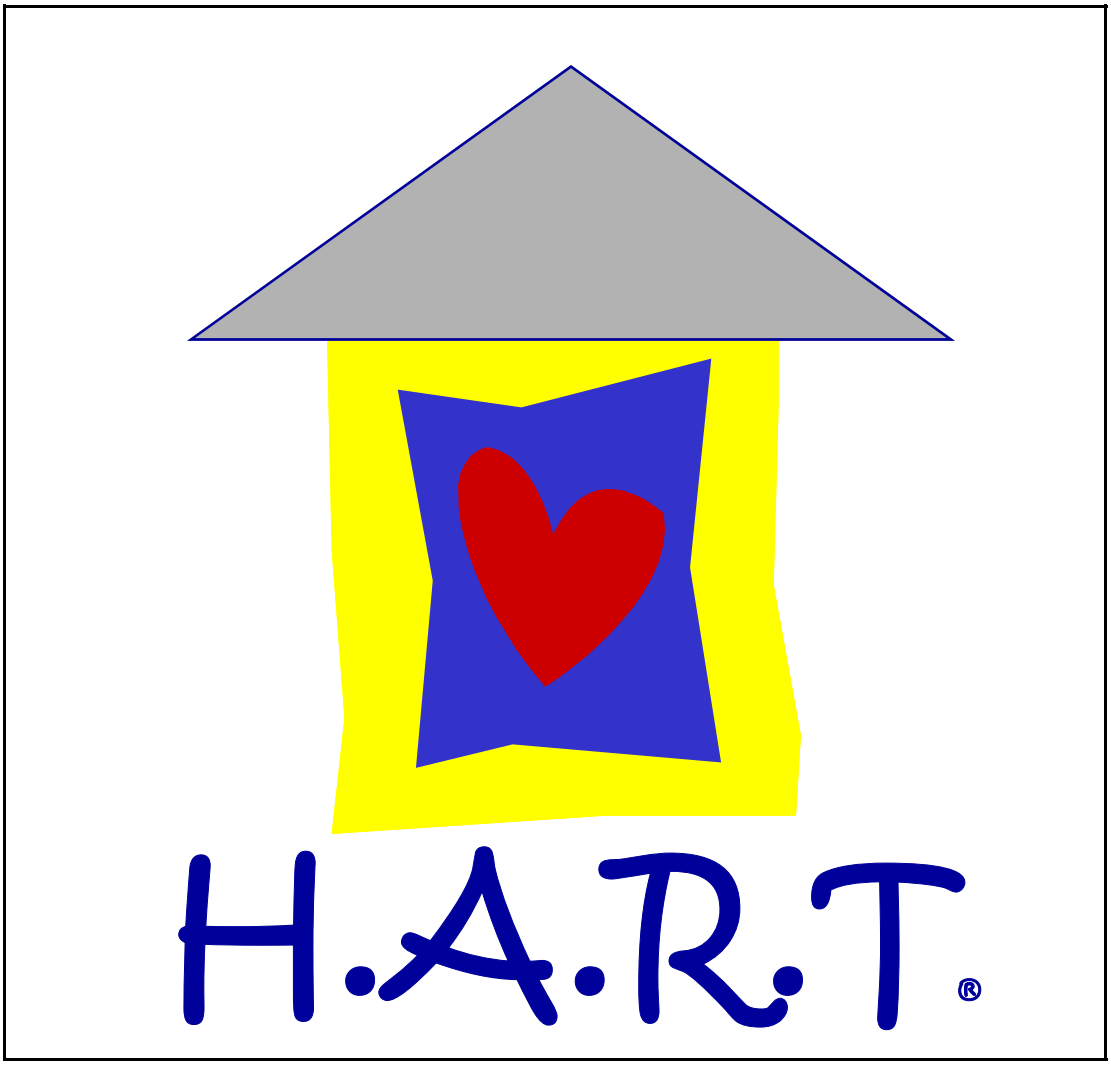
Comments *Revised 4/17/03*

How your house works!®



An EZ guide & workbook to Home Health principles

Home Asthma Reduction Training Workbook®



Helping you to reduce asthma for the ones you love!

NORTHWEST AIR POLLUTION AUTHORITY

Lead Safe Work Practices Checklist

Who Should Use The Checklist

Anyone working on homes built before 1978; lead-based paint was banned from residential use in 1978. Homes built before 1950 have the most lead paint. Lead paint was most often used on windows, trim, porches and outside walls.

Why Follow Lead Safety Practices

Paint repair, remodeling, and home repair projects that involve old paint can create severe lead dust hazards. Any time a project creates dust or paint chips it may be also creating a lead hazard. HUD and DOE state that small repair work (less than 2 square feet inside and 20 square feet outside) does not trigger lead safe practices. However, even small jobs can create big problems if the paint has a high lead content and the activity creates substantial dust and chips (e.g., power sawing). Young children are at greatest risk from lead hazards because they often put their hands in mouths and bring dust and chips into their developing bodies. Follow the checklist to control, contain and clean up lead dust and paint chips.

How to Use the Checklist

The checklist shows the precautions appropriate for *Level 1: Do No Harm,* the minimum requirements that are feasible for all weatherization crews and consistent with Department of Energy policy. Additional precautions associated with Level 2: Improve Indoor Environmental Conditions are shown in italics at the bottom of the checklist and are more aggressive actions to address lead hazards.

Lead Safe Work Practices Checklist

Address:_____ Occupant Name:_____

Date Unit Survey Completed:_____ Assessor Name:_____

Level 1: "Do No Harm" (This applies to all work of any size.)

1. Seal off the Inside Work Area

- Keep children and pregnant women out of the room.
- Remove as much furniture as you can from the room.
- Cover remaining furniture with heavy plastic sheets and tape it down.
- Cover the work area floor with heavy plastic, tape or staple edges to the floor or walls. Place plastic at least 5 feet from work spot.
- Be careful not to track dust out of the area.
- Do not eat, drink or smoke while working.

2. Protect the Outside Work Area

- Keep children and pregnant women away from the work area.
- Remove toys, garden supplies, and other resident items from the work area.
- Place heavy duty plastic sheeting or landscaping fabric below and 10 feet out from work area. Hold down edges with heavy objects. Tape or staple edges to appropriate surfaces. You may use attach (tape or staple) zip lock bags below small drill holes to catch paint chips and dust.
- Close windows and doors within 20 feet of work spot.

3. Avoid Dust, Chips or Fumes that May Contain Lead

- Work wet, Water helps keep lead dust from the air. Mist paint before you scrape or sand. Use wet sanding sponges.
- Don't sand blast or power wash. This can make clouds of lead dust.
- Power sanders or grinders should have HEPA filters and hoods to trap dust.
- Do not use open flames or heat guns above 1100° F.
- Do not use paint strippers with methylene chloride.

4. Keep the Area Clean of Dust, Paint Chips and Debris

- Fold up plastic sheeting, fold dirty side in (dirty side to dirty side) to contain dust and paint chips. Seal plastic with heavy duty tape.
- Place trash in heavy plastic bags, close with heavy duty tape.
- Use a vacuum with a HEPA filter to clean up dust and debris. Vacuum carpet slowly.
- Scrub floors with soap and water. Rinse well with clean water. Change water for each room.
- For outside work, pick up an chips or debris that was not caught by the plastic sheets, landscape fabric or zip lock bags.
- Never burn trash with lead in it.

Lead Safe Work Practices Checklist

5. Keep Dust Off Yourself

- Wash hands before eating.
- Wear NIOSH approved respirator when substantial dust is produced (e.g., N95).
- Clean shoes with wet wipes before leaving work area.
- Change work clothes and shoes right after you leave the work area.
- Wash work clothes separately from family laundry. Shower as soon as possible.

5. Use the Right Supplies

- Safety glasses and special work clothes, gloves, hat and shoes (for high dust jobs)
- Heavy plastic sheets (4 mil) and heavy duty tape and landscape fabric
- Plastic zip lock bags (for use when drilling small holes to catch paint chips)
- Two pails –one to wash and one to rinse. Soap and water
- Spray bottle to wet down work surfaces
- Wet sanding sponges
- Rags or paper towels
- Heavy plastic trash bags
- Vacuum with HEPA or high efficiency filter
- Dust mask or respirator if significant dust is likely to be generated

IEQ & You

Informal Education for staff & clients

Education Series

Introduction

The following informal curriculum, designed to convey the basic concepts of IAQ, will serve as the basis for communication between staff and clients about Indoor Air Quality. It is meant to be a simple document that conveys the minimum anyone needs to know to get the basics about what do to achieve healthy IAQ. It was derived in part from the ARC document but also standard IAQ principles that have been highlighted by many professionals in the field.

How

All staff should understand the basics of Indoor Air Quality and how it affects health. The basic principles on the reverse side are an easy start to gaining that knowledge. Once staff are comfortable, a conversation can begin with every client. This may begin as a training for staff, but this document will be the cornerstone of that training.

When

Any contact with a client can be a possible time to talk about IAQ. The curricula is designed to be informal, so it should be conversational in nature, yet informative. The intention is to educate without scaring, and find out if there is a health or house issue that we can help with. It should be relaxed and assuring. A scenario in the office as: A client comes in for eligibility and says, ".., yeah we have a bit of mold around our windows…" The response of the intake personnel should respond with something like "… really, for how long? Did you know that high relative humidity can cause mold around windows…" Some engaged response based from the 8 IAQ principles, this should be seen as an opportunity by staff to offer an other level of help to their clients.

Who

Any and all staff should become familiar with the IAQ principles, they should be as ease with it as giving directions to the local destination. From the admin to WX tech leads etc.

IEQ & You

Informal Education for staff & clients

Informal Education Series

A thumbnail sketch of Indoor Environmental Quality and why it is important

Indoor Environmental Quality is the equivalent air pollution control for the inside of our homes. Unlike outdoor environmental air pollution, indoor environmental pollution currently has less stringent regulations and in some aspects no regulations at all. Although this is slowly changing, regulations will never be able to enforce how we live in our homes. With this in mind, working with clients directly to help them make a better living space is an important opportunity for improving health.

The basics – in a nutshell

There are a few basic elements to creating a good Indoor Environment. It must be **Dry**. Dry means – no leaks, no elevated realtive humidity (above 45%), no living with unwanted water in the space. As simple sounding as this may be a very high percentage of IEQ issues are a direct result of not being dry. **Clean.** A house must be tidy in order to clean it. When homes are not clean, pests and dust multiply. In addition, sanitation issues lead to health hazards. This not a mechanical fix, the occupant must be able to keep the space clean. **Well Ventilated.** This means fresh air coming into the space and the air that is inside getting circulated out. Air that becomes stagnant may be high in humidity, smells, virus, bacteria and chemicals from the space. Ventilation does not solve all indoor air problems but helps most of them. **Combustion Product Free.** Combustion products are the gasses created by burning the fuels that service our ovens, stoves and furnaces. These include the well known CO (Carbon Monoxide). Although codes exist to exhaust these gasses from the space, full compliance with codes may not be achieved by virtue of incorrect installation or understanding of how the air pressure forces work upon a space. It is important to have qualified technicians with an understanding of back drafting and other forces working in the home that can create a hazardous condition. **Pest Free.** Rodents, cockroaches and other creatures who are "uninvited" guests in the home are pests, and often carry disease and can be triggers of asthma. They do not belong in the home and should be eliminated as quickly and non-toxically as possible. Which leads to being **Toxic Chemical Free.** Toxic chemicals such as ammonia, chlorine (bleach), tolulene (glues, resins, some paints) , triclosan (anti bacterial soaps) , formaldehyde and many more are present in most homes. It is important to understand the combination of these chemicals has no regulation, each are regulated separately and that most tested MSDS (Material Safety Data Sheets) exposure limits are based on an 8 hr work exposure. Most of us spend more time than that in our homes and our exposure may be amplified if good ventilation and adequate personal protection is not available. **Lead Hazard Free** Any home built before 1978 could have lead hazards, potentially even into the 80's. Peeling paint is the most common form of exposure, however certain building materials and solder may also contain lead.

IEQ & You

Informal Education for staff & clients

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Dry
Minimizes mold growth • reduces chances of pests • low humidity

Clean
Eliminates asthma triggers • reduces chances of pests •

Well ventilated
Helps keep home dry • reduces strength of contaminants

Combustion Product free
These products are poisonous and should not be breathed •

Pest Free
Rodents, roaches carry disease and their byproducts are asthma triggers •

Toxic Chemical Free
Most chemicals found in the home are toxic to living organisms • by products can be asthma triggers

Lead Hazard Free
Paint that is older than 1978 may contain lead • peeling paint presents a health hazard

Lead Safe Work Practices Checklist

Address:_____ Occupant Name:_____

Date Unit Survey Completed:_____ Assessor Name:_____

Level 2: Improve Indoor Environmental Conditions

(Follow these additional steps.) **Repair & Clearance**

- ☐ **Repair all flaking, peeling, chipping or other deteriorated paint and the underlying source of the problem using lead safe work practices.**

  In Level 2, take proactive steps to fix lead paint hazards (make paint smooth and intact).

- ☐ **In units built in and before 1960, conduct lead dust clearance in the work area**.
  - Clearance includes a visual inspection to ensure that paint is intact and dust testing to show that dust lead is below federal and state standards.
  - Use a certified lead inspector, risk assessor or sampling technician.
  - If lead abatement or HUD rehabilitation funds are used: Conduct clearance testing in all units built before 1978. Use independent clearance personnel.
  - If lead abatement funds are used: The entire housing unit must pass dust testing.

Opportunity Council

Indoor Environmental Summary Date _____

Check which forms were used:

____ Pollution Source Survey ____ Diagnostic Test Report ____ Combustion Safety Testing

____ Ventilation Worksheet ____ Lead Assessment Report ____ Weatherization Audit

Careful review of all documentation, measurements & observations the indicate:

____ There are **significant** indoor environmental problems at this residence

____ There are **moderate** indoor environmental problems at this residence.

____ There are **minimal** indoor environmental problems at this residence.

Causes of indoor environmental problems:

Proposed plan to solve these issues:

Opportunity Council

Family Energy & Indoor
Air Quality Action Plan

Date: _____

Three Steps to improve your Indoor Air Quality

1.

2.

3.

Three steps to reduce your Energy Bills

1.

2.

3.

The Opportunity Council Energy Representative has explained what we need to do to make this action plan work for us. We can call the energy representative at the Opportunity Council if we have any questions.

Signed: _____

Summary of Work Completed

(Space Holder)

For WX Health Plus

Technical Support Document
Diagnostic Report

Combustion Safety

This document is intended to support in detail the Combustion Safety Test Report. The Combustion Safety Test Report is a tool to document the condition of 1 appliance and its performance. A separate form must be be filled out for each existing combustion appliance in homes weatherized or repaired. Each row of the pre and post columns must be addressed.

The Combustion Safety Test Report must be filled out in detail for each completed project. Document in the comments section of the Combustion Safety Test Report any special circumstances or health and safety related concerns that might help someone understand the condition of the home (pre and post), the concerns expressed by the occupants or the agencies concerns for the occupants safety at the time testing was performed.

LINE #1 Measure existing CAZ pressure (baseline), CAZ WRT outside
Measure the existing CAZ pressure (baseline), house with reference to outside. You will need this measurement when measuring combustion appliance zone worse case and other procedures that are normally low pressure measurements (-15pa to 15pa).

LINE #2 Outdoor wind speed
Using a Dwyer wind gauge measure and record the outside wind speed if there is noticeable wind at the time of testing. If the wind speed is consistently in excess of 15 mph or gusting to the point of not being able to get an accurate test, document this condition and return at a later date to get accurate test results. If winds in excess of 15 mph do exist, this condition does not preclude performing Section I and Section II of the diagnostic test report. What it does mean is you will have to come back (when there is wind less than 15 mph) to confirm line #8, 13, 15 and 17. You may find hazardous conditions before you get to line #8 or other problems not related to pressure and draft.

LINE #3 Outdoor temperature
Record the outside ambient temperature. You will need this number to determine if there is adequate minimum draft (line #13 &15).

Line #4 Combustion appliance zone (CAZ) designate appliance

Record what kind of appliance (furnace, hot water heater, parlor stove, fireplace, woodstove etc.) is in the combustion appliance zone, write it in on the line provided. Also determine what type of appliance it is in terms of direct vent, sealed combustion, induced draft etc.. This will help determine how and where an appliance should be tested later in this procedure.

***Definition:** Combustion appliance zone (CAZ) is the physical area in which the combustion appliance is located or contained by door or access closure. Examples: A closet with a closing door, an attic with a closing access panel between the living space and attic, a living room with a fireplace or wood stove that has doors that isolate this area from bedrooms and other rooms. A combustion appliance zone is any area (zone) which can be physically closed off to another part of the home and that contains a combustion appliance. If the only combustion source is a fireplace or wood stove go to line #17.

Line #5 Is there a hazardous or unsafe condition
Is there anything in the combustion appliance zone that could be considered a health and safety problem. IAQ, electrical discrepancies, fire hazards, combustibles or potential testing problems that should be documented. If yes you must comment with name and date.

Line #6 Are there visible signs of vent pipe leaks or damage
Are there any problems with the combustion appliance vent pipe, connecting chimney, chimney liner or vent termination that need repairs or further inspection?

Line #7 Is there the smell of gas or indication of fuel leak
Do you or the client smell any gas? Did you check with a combustible gas detector or with detection fluid? If **there is a leak indicate by marking yes** and contact the local natural gas company or a contractor and document the location of the leak below in the comments section .

Worst case set-up test for combustion appliance zones.

*Definition: Worst case is the condition that puts the appliance (and its operation) being tested in the most hazardous condition through means of house configuration (opening and shutting bedroom, laundry, garage, closet , basement doors etc.) that may happen during the normal or potentially normal operation of the home. This may be different for different lifestyles and occupants but should be tested in a manner that would address many clients and lifestyles. All reasonable house configurations should be considered.

Worst Case Set-Up procedure

Prepare house

a) **a.** Close all interior and exterior doors and windows make sure the furnace air handler is on. Turn on all exhaust fans - bathroom, kitchen, clothes dryers (clean out lint filter)
b) **b.** Start at the room furthest from the combustion appliance and perform a smoke test at each interior door to determine whether to leave it open or closed.
c) **c.** Position yourself in or towards the main body of the house.
d) **d.** Open the door slightly 3/4". If the smoke goes in, leave the door all the way open. If the smoke comes back toward the main body or towards you, close the door.
e) **e.** Smoke test the door to the CAZ. If the smoke comes toward the main body or towards you, open the door. If the smoke goes into the CAZ, close the door.

- ** **Note exception to step (a.)**: If the furnace does not have a manual fan switch you may have to turn on all your fans first (smoke the doors) then turn on the furnace. In this case you must do line #13 a second time going back and smoking the interior doors again to ensure you had the correct setup. If this is the case and you go back and find that you had a door in the incorrect position (opened or closed) adjust and retest then document the results and go back through lines #8 through #13.

Always check rooms which contain mechanical exhaust equipment with chemical smoke as a confirming test. Many times the combination of leaky buildings and supply ducts in a room negate a fans negative effect on the CAZ or mainbody.

Line #8 Measure the CAZ WRT outdoors. Is the CAZ door Open or closed?

Follow worst case set -up procedure (above) to determine whether to leave open or shut the CAZ room door(s). Please circle whether you left the CAZ door OPEN or CLOSED. Then record what the pressure is in the CAZ WRT outside. Refer to line #1, CAZ baseline pressure to have a better understanding of the contribution mechanical systems are having on the home versus natural pressures i.e. stack wind etc..

****Action Level**

All combustion appliance zones must meet DCTED house depressurization limit (HDL) criteria (appendix, page 1)

Line #9 Was there flame roll-out of combustion equipment?

When the (furnace or hot water heater) combustion appliance starts up does the flame come out of the appliance. When possible this test should be done with a cold startup. Many times if the chimney or vent pipe is already heated the appliance will draft but it may not be able to start a draft in a cold chimney. Also check cover panels and the area around the burner for burned or charred spots. If you see flame roll out or signs that it may be happening intermittently then circle **YES** and comment in file .

Line #10 Did the equipment spill gases for more than one minute?
Does the (hot water heater, parlor stove, furnace etc.) appliance spill combustion gases for more than a minute? If **yes**, document length of spill time and related conditions in the comments section. Check all around the draft hood with chemical smoke as some appliances will spill combustion gases and draft at the same time.

**** Note:** Generally you will find if an appliance spills combustion gases for more than 1 minute this is an indicator that there will be a draft, chimney configuration or pressure problems detected at some point between lines 13 and 16.

Line #11 Did the flame change in the furnace when the air handler turned on?
Did the flame change when the fan in the furnace turned on. This can indicate a crack in the heat exchanger. If yes, comment in file and have checked by HVAC technician.

**** Note:** If you are working on a furnace without a manual fan switch you may have to shut down the furnace and start it again to observe this condition because you will have a lot going on when the air handler comes on the first time. Checking for flame change may not detect an existing cracked heat exchanger. Other possible indications of a cracked heat exchanger may be soot in the home, the smell of un-burnt gas or oil, elevated CO levels in the appliance exhaust and elevated CO levels in the living space when the furnace is running. If you encounter any of these conditions there are other tests for cracked heat exchangers that you may want to call out and have performed by a qualified professional (check with your HVAC contractor or technician). Caution and a full understanding of the operating performance of all the combustion appliances in the home must be considered when attributing soot, un-burnt gas smells and elevated CO levels to a cracked heat exchanger.

Line #12 After 5 min. measure the CO in the ambient air in the living space
After the combustion appliance has been running for 5 minutes, test the ambient air of the living room or upstairs hallway (if it is a two story) for CO with your monoxer. Record in parts per million (PPM).

****Action level:** If the ambient CO in the home is above 5 ppm (maximum allowable 5 ppm) and attributable to any combustion appliance in the home then

action must be taken to mitigate the source of the CO before weatherization or repair work starts or be monitored and resolved as part of the work specified. **No home shall be left with ambient CO greater than 5 ppm (attributable to existing combustion appliances) after 5 minutes of run time for an appliance.**

Line #13 Measure the draft pressure in the vent of the combustion appliance Test the combustion appliance vent WRT CAZ
With your digital manometer measure the draft pressure in the combustion appliance vent (preferably 18" up the vent pipe from the appliance) with reference to the room and record the number in pascals. Be sure to indicate whether negative or positive. Always check your draft pressure measurements with chemical smoke as a confirming test.
If the appliance does not have adequate draft under worst case conditions you can start evaluating the problem by turning off all fans and see if the appliance drafts under any or best case condition.
Refer back to line# 2 and check the wind speed, if the wind speed is consistently in excess of 15 mph or gusting to the point of not being able to get an accurate test, document this condition and return at a later date to get accurate test results. If there is marginal draft or a condition that may cause backdrafting or spillage, inform the occupants of this situation and make the appropriate recommendations for use of the appliance until additional testing or repairs can be made. Document the condition in the comments section.

**** Action level:** If the appliance tested does not meet the minimum acceptable draft requirements then action must be taken to achieve these minimum requirements before weatherization or repair work starts. Or the needed repairs must be specified and subsequently monitored and resolved as part of the work performed. **Minimum acceptable draft pressures are CA vent WRT CAZ: below 20°F -5pa, 20°to 40° -4pa, 40°to 60° -3pa, 60°to 80° -2pa, 80°+ -1pa**

Line #14 Measure the CO in the exhaust gases of the vented appliance
With your monoxer take a measurement in the undiluted flue gases of the combustion appliance. Where practical this test should be measured in the flue ports of the appliance. If you cannot measure at the appliance measure at its termination point realizing this is a diluted sample but better than not testing at all.

****Action level:** The target CO level for testing of undiluted flue gases in furnaces, heaters and water heater tanks is 35 ppm. **The maximum acceptable level is 100 ppm.**

Line #15 If the door of CAZ is closed - open it. If the door is open – close it. Open/closed. Combustion Appliance vent WRT CAZ.
If in the beginning of your worst case set-up test, you left the CAZ door closed then open it. If left open in the beginning, then close it. Then record the draft

pressure combustion appliance vent WRT CAZ as in line #13. This is a verifying test. This test double checks your measurements and helps confirm the results. Always check your draft pressure measurements with chemical smoke as a confirming test.

****Action Level**
All combustion appliance zones must meet DCTED house depressurization limit (HDL) criteria (appendix, page 1)

Line #16 Heat Rises: measure temperature across heat exchanger: supply plenum temp - return plenum temp
To get the "heat rise", measure the temperature in the supply air plenum and return air plenum. Subtracting the return plenum temperature from the supply air tempurature equals the "heat rise". Take these temperature measurements in the plenums as close to the furnace as possible. Record in degrees Fahrenheit. The recommended heat rise for the unit is often on the name plate of the furnace.

****Action level:** If the heat rise (the difference between return air temp at the plenum and supply air temp at the plenum) is greater than 70° or less than 40° there must be a referral made for further analysis by a furnace technician. If the heating unit has not been serviced within the last twelve months a furnace clean and tune is recommended.

Line #17 Fireplace/wood stove zone worst case test: FPWSZ zone WRT outdoors
Record the pressure of the zone that the fireplace or wood stove occupies. See **Worst Case Set-Up procedure** between lines #7 and #8**,** this procedure is the same for fireplace/wood stove zones. Also document any vent pipe, chimney or clearance problems with the wood burning appliance in the comments section.

****Action Level**
All combustion appliance zones must meet DCTED house depressurization limit (HDL) criteria (appendix, page 1)

Line #18 Measure the CO in exhaust gases of kitchen stove: Range top

burner 1
burner 2
burner 3
burner 4
Measure the CO in the exhaust gases (after 5 minutes of burn time) of the range top burners with your Monoxer. Start with the left front burner (burner #1) and move in a clockwise direction. Record the CO in PPM for each burner, 18" above each burner.

oven

Then take a reading in the undiluted flue gases of the oven (after 5 minutes of burn time) and record in PPM. Look in the oven for anything that may melt or catch fire before performing the test. Make sure the oven burner is actually on during the test.

ambient
After 15 minutes of run time with the oven on at 350°F take a reading of the ambient air in the middle of the kitchen and record.

ambient CO after 45 minutes if CO is over 5 ppm after 15 min.
If the ambient CO is greater than 5 ppm after 15 minutes leave the oven on for an additional 30 minutes and test again. record the results.

****Action level: Maximum allowable CO (after 5 minutes of burn time) in the exhaust of gas ranges or burners on gas (including propane) ranges is 35 ppm.** If this level cannot be achieved house tightening measures cannot proceed unless a ventilation strategy is implemented that keeps ambient CO levels at 5 ppm or less during operation of the appliance. Use caution when installing ventilation systems that will create negative house pressures that could potentially cause backdrafting of other combustion appliance.

Line #19 Return house to pre-test condition, circle DONE when complete

Comments: Provide comments in detail when you encounter unsafe conditions, also document procedures or repairs that were undertaken to resolve or prevent any unsafe conditions. Use both sides of the form or additional paper as needed.

Abbreviations:

CO: Carbon monoxide
CA: Combustion appliance
CAZ: Combustion appliance zone
FPWSZ: Fireplace wood stove zone
HDL: House Depressurization Limit (a standard adopted by DCTED)
HVAC: Heating, ventilation, air conditioning
PPM: Parts per million
Pa: Pascals
WRT: With reference to

Terms:

Air handler – A steel cabinet containing a blower with cooling and/or heating coils connected to ducts, which transports indoor air to and from the air handler.

Backdrating – Continuous spillage of combustion gases from a combustion appliance.

Bimetal element – A metal spring, lever, or disc made of two dissimilar metals that expand and contract at different rates as the temperature around them changes. This movement operates a switch in the control circuit of a heating or cooling device.

Burner – A device that facilitates the burning of a fossil fuel like gas or oil.

Carbon monoxide – An odorless and poisonous gas produced by incomplete combustion.

Combustion air – Air that chemically combines with a fuel during combustion to produce heat and flue gases, mainly carbon dioxide and water vapor.

Combustion analyzer – A device used to measure steady-state efficiency of combustion heating units.

Depressurize – Cause to have a lower pressure or vacuum with respect to a reference of a higher pressure.

Dilution air – Air that enters through the dilution device --- an opening where the chimney joins to an atmospheric-draft combustion appliance.

Dilution device – A draft diverter or barometric draft control on an atmospheric-draft combustion appliance.

Draft diverter – A device located in gas appliance chimneys that moderates draft and diverts down drafts that could extinguish the pilot or interfere with combustion.

Fan control – A bimetal thermostat that turns the furnace blower on and off as it senses the presence of heat.

Flue – a channel for combustion gases.

Heat anticipator – A very small electric heater in a thermostat that causes the thermostat to turn off before room temperature reaches the thermostat setting, so that the house does not overheat from heat remaining in the furnace and ducts after the burner shuts off.

Heat rise – The number of degrees of temperature increase that air is heated as it is blown over the heat exchanger. Heat rise equals supply temperature minus return temperature.

High limit – A bimetal thermostat that turns the heating element of a furnace off if it senses a dangerously high temperature.

House pressure – The difference in pressure between the indoors and outdoors measured by a manometer.

Inch of water – Small air pressure differences caused by wind, blower doors, furnace fans, and chimneys are measured in inches of water (in.-H_20) in the American measurement system.

Input rating – The rate at which an energy-using device consumes electricity or fossil fuel.

Intermittent ignition device – A device that lights the pilot light on a gas appliance when the control system calls for heat thus saving the energy wasted by a standing pilot.

Make-up air – Air supplied to a space to replace exhausted air.

Manometer –Measuring device for small gas pressures

Mortar – A mixture of sand, water, and cement used to bond bricks, stones, or blocks together.

Net free area – The area of a vent after that area has been adjusted for insect screen, louvers, and weather coverings. The free area is always less than the actual area.

Open-combustion heater – A heating device that takes its combustion air from the surrounding room air.

Oxygen depletion sensor (ODS) – A safety device for unvented combustion heaters that shuts gas off when oxygen is depleted.

Pascal – A unit of measurement of air pressure. (See Inch of water.)

Plenum – The piece of ductwork that connects the air handler to the main supply duct.

Pressure – A force encouraging movement by virtue of a difference in some condition between two areas.

Return air – Air circulating back to the furnace from the house, to be heated by the furnace and supplied to the rooms.

Room heater – A heater located within a room and used to heat that room.

Sealed-combustion heater – A heater that draws combustion air from outdoors and has a sealed exhaust system.

Developed by: Building Performance Center

Revised 5/03/03

Space heating – Heating the living spaces of the home with a room heater or central heating system.

Spillage – Temporary flow of combustion gases from a dilution device.

Stack effect – The draft established in a building from air infiltrating low and ex-filtrating high.

Steady-state efficiency – The efficiency of a heating appliance, after an initial start-up period, that measures how much heat crosses the heat exchanger. The steady-state efficiency is measured by a combustion analyzer.

Supply air – Air that has been heated or cooled and is then moved through the ducts and out the supply registers of a home.

Vent connector – The vent pipe carrying combustion gases from the appliance to the chimney.

Vent damper – An automatic damper powered by heat or electricity that closes the chimney while a heating device is off.

Venting – The removal of combustion gases by a chimney.

Worst-case depressurization test –A safety test, performed by specific procedures, designed to assess the probability of chimney back drafting.

WRT – "With respect to" used to show that the air pressures between two areas are being compared.

Zone – A room or portion of a building separated from other rooms by an air barrier---- not usually an effective air barrier.

Opportunity Council

Weatherization Project Summary

Date _____

Auditor _____

Estimated start date: _____ Estimated completion date: _____

Weatherization measures and materials installed:

Attic **To Complete Measures**

Material Specs:

☐ **Landlord**
☐ **Client**
☐ **Homeowner**

Underfloor (Crawlspace)

Material Specs:

☐ **Landlord**
☐ **Client**
☐ **Homeowner**

Walls

Material Specs:

☐ **Landlord**
☐ **Client**
☐ **Homeowner**

Hot Water Heater

Material Specs:

☐ **Landlord**
☐ **Client**
☐ **Homeowner**

Heating System

Material Specs:

☐ **Landlord**
☐ **Client**
☐ **Homeowner**

General Repairs

Material Specs:

☐ **Landlord**
☐ **Client**
☐ **Homeowner**

Operation & Maintenance of repairs & new materials

Attic

Maintenace:

Opportunity Council

Weatherization Project Summary

Date _____

Auditor _____

Underfloor (Crawlspace)

Maintenances:

Walls

Maintenance:

Hot Water Heater

Maintenance:

Heating System

Maintenance:

General Repairs

Maintenance:

Please Note: Starting date and completion date are subject to change. Completion of the above measures will depend on available funding and compliance with state and local codes. Please contact lead technician at 360 733 6559 if work cannot be completed by date listed above.