



HOUSING QUALITY STANDARDS (HQS)

Series 4
Gas Furnaces & Water Heaters
And INSPECTIONS



Hazards Relating to Improper Venting



- All gas burning appliances can produce Carbon Monoxide fumes.
- Furnaces and Water Heaters are required by law to be vented to the outside.
- When a flue pipe is broken, rusted or disconnected, it does not carry the Carbon Monoxide gas away from the house or apartment.
- This can lead to illness or death.



Carbon Monoxide

- Carbon monoxide (CO) is an odorless gas that can build up to dangerous concentrations indoors when fuel burning devices are not properly operated, vented, or maintained. Because it has no odor, color or taste, CO cannot be detected by smell, taste, or sight. It is estimated that acute CO poisoning contributes annually to more than 2,000 deaths in the United States.¹ In addition, the US Consumer Product Safety Commission estimates that 8,000 to 15,000 people each year are examined or treated in hospitals for non-fire related CO poisoning.

¹ *Journal of the American Medical Association (JAMA)*, 288(8): 988-995; August 28, 2002.



Owner's Responsibilities



- ❑ Furnaces, Water Heaters and other gas burning appliances should be installed by professionals.
- ❑ Have the heating system (including chimneys and vents) inspected and serviced annually.
- ❑ Chimneys and flues should be checked for blockages, corrosion, disconnections, and loose connections.



Term Definitions

- Carbon Monoxide** – Carbon monoxide is a flammable, colorless, odorless, tasteless, toxic gas produced during incomplete combustion of fuel - Natural Gas, Oil, Coal, Wood, Kerosene, etc. –
- Combustion** - The burning of fuels such as coal, oil, gas, and wood. Carbon monoxide is a by product of combustion.
- Gas Appliance** – Any appliance, such as stove, furnace or water heater that burns gas to operate.



Term Definitions – cont.

- **Vent** – An opening permitting the escape of fumes, air, gas, or steam.
- **Vent Stack** – An outlet for air or gas that protrudes through the roof deck such as a pipe or stack.
- **Vent Bonnet** – The funnel shaped base of a vent pipe used to gather fumes or gases and exhaust them up into the flue or vent pipe.
- **Flue pipe** – The upward sloping pipe that carries gases or fumes to the outdoors.





Term Definitions – cont.

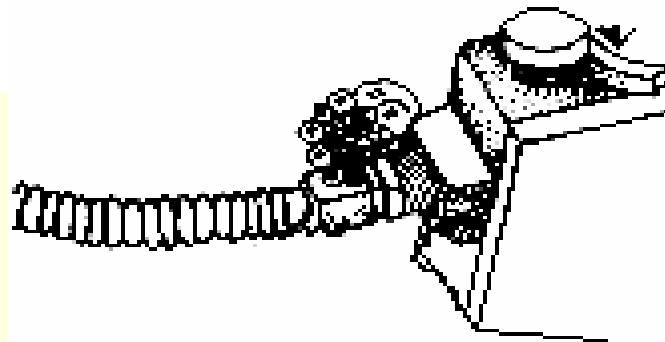
- **Gas Valve** – A mechanical device for controlling the flow of natural gas. The valve can shut off the gas flow by turning the handle $\frac{1}{4}$ turn.
- **Water Valve** – Water valves can NOT be used for natural gas. Here are two typical water valves.
- **TPR Valve** – Temperature and Pressure Relief Valve.





Term Definitions – cont.

- Gas Connection Hose – A flexible tube that connects the gas shut off valve to a water heater or stove.





Water Heater – fire damage



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Water Heater – Rust from Moisture



4.10 FWH



Fire damaged & New Water Heater

(Not vented & No discharge line)



4.11 FWH



Water Heater

with no discharge line



- A discharge line safely directs the water down to the floor.
- The water heater on the right, has no discharge line from the TPR valve.
- If the pressure relief valve suddenly releases super hot water, serious burns could result.



Double vent hood – allows fumes to escape into unit instead of exhausting outside



4.13 FWH



Water Heater

(Downward Sloping Flue Pipe)



- ❑ All gas flue vent pipes from Furnaces and water heaters must have a continuous upward slope.
- ❑ Downward sloping pipes allow carbon monoxide to collect until a build up of gas forces it back into the room.



Water Heater

(Flue pipe must slope upward)

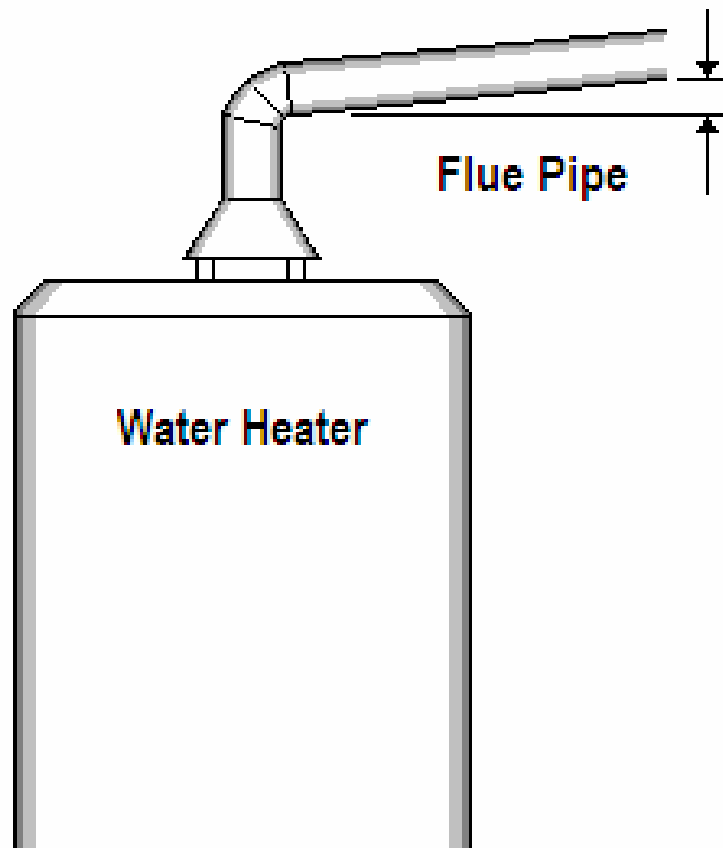


4.15 FWH



Proper Slope for Flue Pipes

Minimum Slope
= 1/4" per foot



- Minimum upward slope towards the chimney: 1/4 in/ft.
- Flue Vents with no or little upward slope will not allow the poisonous carbon monoxide gas to escape outside.



Rusty flue vents

(will leak Carbon Monoxide)



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Rusty flue vents

(will leak Carbon Monoxide)





Furnace Return Air Vents



- Furnaces **must** have return air from a different room than the furnace room.
- Note the vent in the return air duct beside the furnace.
- Air filter **not** properly installed.



Furnace Cover Panels



- No cover on furnace!
- This is a city Code violation.
- Danger of electrocution.
- Danger of getting burned from exposed flames.



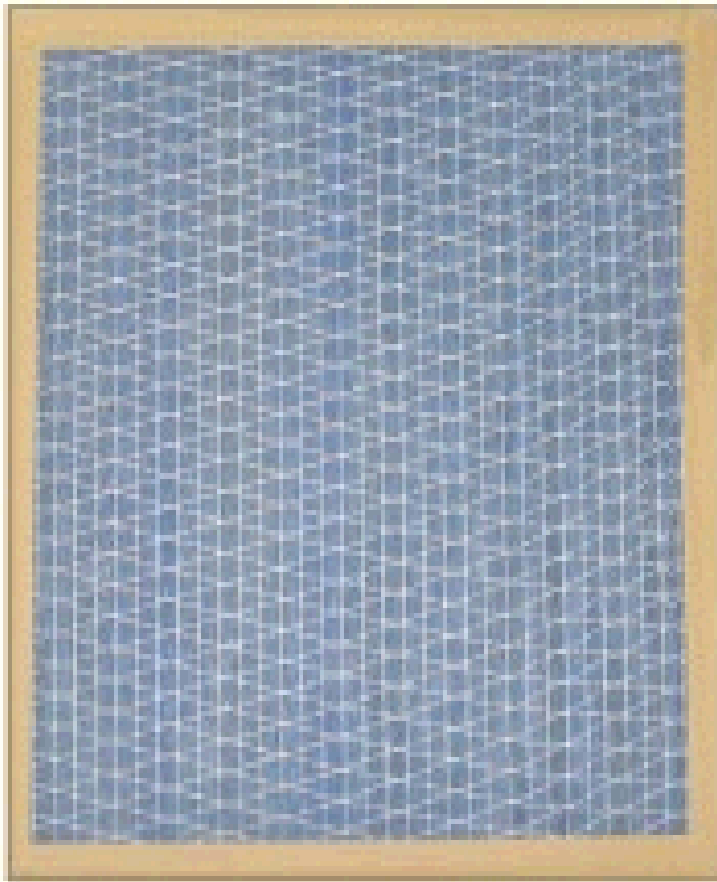
Furnace Duct Work



- Water, gas and coolant lines are cut through supply vent.
- This is a city code violation too.
- Very hot air from the furnace could cause a fire from a gas line or a leak from a water or coolant line.



Furnace Filters



- Clean furnace filters are required for all furnaces during new and annual inspections.
- Furnaces require clean filters to work properly.
- A dirty furnace filter will cost more money to operate and shorten the life of the furnace.



Furnace & Water Heater Notations on Deficiency List

- Example 1:** If the water heater does not have a discharge line (pipe) that is long enough, the deficiency item will look something like this:
 - Heating & Plumbing
 - 7.4 - Extend TPR Repair Furnace Flue Pipe to maintain a continuous upward slope. (o)



Furnace & Water Heater Notations on Deficiency List

- Example 2:** If the flue pipe has been patched or attached with duct tape or some other non fire rated material such as masking tape, aluminum foil or a rag, the deficiency item will look something like this:
 - Heating & Plumbing
 - 7.2 - Remove duct tape from Flue Pipe on water heater and install appropriate Fire Rated tape. (O)



Furnace & Water Heater Notations on Deficiency List

- Example 3:** If the furnace is not operating because it is broken, the deficiency item will look like this:

- Heating & Plumbing
7.2 - Repair Furnace to Operate Properly. (O)
Note: if the furnace does not operate due to no gas and it is the tenant's responsibility it will read:
7.2 Provide gas service to furnace. (T)
Repair furnace if needed after gas is provided by tenant. (O)



HAKC Staff Responsibilities

- Conduct HQS inspections.
 - Initial move in inspections
 - Annual (yearly) inspections
 - Complaint inspections.
 - Critical (tenant safety) inspections
- Type up & send deficiency list to owner & tenant.
- Reschedule failed annual & non-critical complaint inspections for 25 to 30 days.
- Reschedule critical inspections for 24 to 24 hours.
- Conduct a follow up HQS inspection to verify that the cited deficiencies have been properly corrected.



Failed Inspections

- Any deficiency found in a unit during an inspection, will cause that unit to fail the inspection.
- If a request for a 3rd inspection is not made within 10 calendar days of 2nd inspection the HAP contract will be terminated.
- If the owner fails to correct the sited deficiencies within 30 days of the beginning of the abatement period, the HAP contract will be terminated.
- A property taken off the program for failed inspections is not eligible for future contracts with Section 8 for a period of 12 months, even if the property is sold or the current tenant moves out.



Summary

- Repair any deficiencies cited by an HQS inspection before re-inspection.
- To prevent future failed inspections, perform regular maintenance on the unit to maintain HQS standards.