INSURANCE INFORMATION INSTITUTE

Wood Stove Safety

If you're among the thousands who have succumbed to the lure of the wood burning stove, keep in mind that the return to the "good old days" of wood stove heating can have some old-fashioned drawbacks.

Fire hazard is one of them.

The resurgence of the wood burner as a supplementary source of heat has led to an alarming—and growing—number of fires traceable to careless installation or misuse.

The purpose of this pamphlet is to help bridge a generation gap in wood stove knowledge by providing some basic information on the selection, installation, use and maintenance of solid fuel heating equipment.

Here are some principal do's and don'ts:

DO—make sure there is enough clearance between the stove and combustible materials, including floors, walls and ceilings.
DO—place the stove on a noncombustible, fire resistant base.
DO—have a mason or other competent person inspect the chimney.
DO—burn only dry, well-seasoned wood.
DO—consider opening a window a crack for ventilation.
DO—dispose of ashes in a closed metal container outside the house.

DON'T—extend the stove pipe through a wall or ceiling unless there is no possible alternative.
DON'T—connect a wood stove to a fireplace chimney unless the fireplace has been sealed off.
DON'T—connect a wood stove to a chimney serving another appliance burning other fuels.
DON'T—start a stove fire with flammable fluids, such as gasoline.
DON'T—burn trash in a stove; doing so can start a chimney fire.
DON'T—let a wood fire burn unattended or overnight.

SELECTING A STOVE

Be sure your stove is made of sturdy, suitable material, such as cast iron or steel. Look for stoves listed by Underwriters Laboratories (UL) or other recognized testing laboratories.

If you purchase a used stove, check it carefully for cracks or other defects. The legs, hinges, grates and draft louvers also should be checked carefully.

If you live in a mobile home, be sure your stove is of a type specifically approved for use in such a dwelling.

INSTALLATION

Before installing your stove, check with local authorities to be sure you comply with local fire and

building codes.
Think twice about where you'll put your stove. Usually a centralized location is best if the stove is to be used as a heating device.

One point to consider is that warmed air rises. If the stove is too near a stairwell, you may lose much of your heat to the floor above.

If you plan to use an existing chimney, both its location and the length of its flue will be determining factors. Note these guidelines:

- The horizontal section of the uninsulated stove pipe should not be more than three-quarters as long as that section of the flue above the point at which the pipe and the flue connect.
- National Fire Protection Association (NFPA) standards call for a 36-inch clearance between a room heater stove and any *combustible* wall or ceiling surface. If the length of the horizontal portion of the stove pipe won't permit that much clearance, protect the combustible wall with a panel of some protective material, such as sheet metal, spaced at least one inch from the wall.

Careful attention to the floor mounting of your stove is essential. To meet NFPA standards:

- Stoves having less than two inches of ventilated open space beneath the fire chamber or base of the unit should never be *installed on combustible floors or have any combustible material beneath them unless permitted by their listing*.
- Stoves having legs or pedestals providing two to six inches of ventilated open space beneath the fire chamber or base may be installed on combustible floors protected by four inches of hollow masonry, laid to provide air circulation, and covered with 24 gauge sheet metal unless permitted by their listing.
- If there are more than six inches of ventilated open space beneath the fire chamber or base, a stove may be placed on a combustible floor protected by a solid brick, concrete or stone masonry unit at least two inches thick. That unit should be covered by a sheet of 24 gauge steel unless permitted by the stove's listing.
- The floor protection should extend at least 18 inches on all sides of the stove.

CHIMNEY REQUIREMENTS

If you use an existing fireplace chimney to vent your stove, it must be sealed off below the stove pipe's point of entry to prevent toxic gases from backing up into the room. This can be done by:

- sealing off the fireplace opening, or
- sealing off the flue itself between the stove pipe connection and the fireplace opening.

The cross-section area of the chimney flue should be at least 25 percent bigger than and not more than three times that of the stove pipe.

Avoid connecting more than one heating device to a single chimney flue because flue gases and sparks may pass from one flue opening into another and unsatisfactory operation may also result.

Be sure your chimney is in good condition and that it has a flue lining. Check for missing flue tiles and cracked masonry. You may want to have a chimney sweep check the chimney and a mason make any repairs that may be needed.

With a masonry chimney, the stove pipe should be extended through the chimney wall to its inner face, *but not beyond*. Use high-temperature cement to fasten the pipe to the masonry.

If you have no suitable chimney or if you prefer not to close off your fireplace, a factory-built chimney listed by a recognized testing laboratory is a good solution. It should extend at least three feet above the highest point where it passes through the roof of the building and at least two

feet higher than any portion of a building within 10 feet.

STOVE PIPE

The stove pipe should be of corrosion-resistant steel of suitable gauge. These are the standards set by NFPA:

Galvanized Sheet Metal Gauge No.	Diameter of Stove Pipe in Inches
26	less than 6
24	6 to 10
22	10 to (not including) 16
16	16

NFPA standards also call for a stove pipe to have an internal cross-sectional area not less than that of the stove's flue collar.

The pipe should be as straight and short as possible, with sections properly secured. If it must have angles, limit them to one or, at the most, two sweeping 90-degree elbows or the equivalent. The horizontal portion of the pipe should rise not less than one-quarter inch to the linear foot, to insure a good draft.

You should not pass a stove pipe through a combustible wall for a hook-up with a chimney flue. However, if there is no alternative, the stove pipe must be passed through a thimble or collar. NFPA has set these standards:
—A ventilated type 24-gauge metal thimble must be at least 12 inches larger in diameter than the stove pipe. (It can be made by a local sheet metal company or tinsmith.)
—A metal or burned fire-clay thimble must be surrounded by no less than eight inches of brickwork or equivalent fire-resistant material.
—Otherwise, all combustible material must be cut out of the wall to provide at least 18 inches of clearance on all sides of the pipe. Material for closing this opening must be noncombustible and insulating.

DAMPERS

If a wood burning stove has an automatic draft regulator controlled by a thermostat, the manufacturer's instructions for installing it must be carefully followed. Alternately, a manually operated damper can be installed on the pipe near the stove. This damper should not obstruct more than 80 percent of the pipe area.

A second damper higher up on the vertical section of the stove pipe is advisable to permit shutting down the stove in case of a chimney fire. You can have this made by a local sheet metal company or a tinsmith.

YOUR WOOD

Green wood has too high a moisture content for satisfactory use. For your stove select wood preferably hard wood—that has been seasoned six months to a year.

Wood split before storing to season dries in less time and burns more evenly. Apple, red oak, sugar maple, beech and ironwood have the best heat values, according to the University of Maine Extension Service.

Use of the proper wood is your best safeguard against an accumulation of creosote, an oily substance which derives from incomplete combustion, on the lining of the chimney flue. A spark can ignite creosote and cause what can be an extremely hot and dangerous fire.

Dry and well-seasoned wood will not only minimize the chance of creosote formation, but will give you the most efficient fire.

Burning green wood can cause the formation of so much creosote that it may even run down inside the stove pipe and drip onto the stove or floor.

STARTING FIRES

Be sure to open the damper near the stove before starting a fire. (If you have a second, higher one, it can remain open, for use only in emergencies.)

Build the fire on a shallow bed of ashes, which provides a heat reflecting surface. Use a small amount of crumpled paper and cover it with a few small sticks of wood fuel, says NFPA. When the draft is started up the chimney flue, larger pieces of wood can be added.

If the fire burns too slowly, the draft louvers of the stove should be opened and the damper above the stove pipe opened wider or all the way. Adjusting the draft and adding frequent but small amounts of wood make an even burning and continuous hot fire.

Above all, never douse gasoline, kerosene or other flammable fluid on wood to get a quick fire.

Another way of asking for trouble is to use your stove for trash burning. The resulting flames can start a chimney fire.

IN CASE OF FIRE

If you have a chimney fire, first call the fire department.

While you're waiting for the firemen to arrive, you can help control the fire by closing the stove's draft louvers and the solid damper in the stove pipe.

CHECKS

Before the heating season each year check and clean your chimney and stove pipe carefully and make any needed repairs. More frequent checks are advisable if you are building up creosote and soot.

Unless you are an experienced and competent do-it-yourselfer, think twice before trying to clean your own chimney—you may damage your chimney lining. Rather spend some money on professional service than create a fire hazard that may cost you thousands of dollars or even result in the destruction of your home!