We had noticed homes in our area with large white pipes run up the side. Some looked like downspouts, but extended up above the gutter. I asked around and was told that was for Radon mitigation. I did some research and learned that many homes cannot be sold until testing has proven Radon levels are low enough or mitigation has been done to achieve safe levels. Radon gas occurs in Colorado soil in many locations. This odorless gas can seep in through basements and cause Cancer. [http://www.epa.gov/radon](http://www.epa.gov/radon)

A friend described his mitigation steps and told me about the contractor that performed it. This contractor also trains other contractors.

Before hiring the contractor, we followed their advice and bought an inexpensive sampling kit. We followed the kit's instructions to leave the small metal can open in the basement for the few days then seal it up and mail it to their laboratory. The resulting 12.4 pCi/l reading was high enough to be unsafe. We hired that same contractor.

**Crawl Space Preparation:**
- Remove all stored items
- Remove all construction debris (e.g.: sharp cornered rocks and concrete chunks, nails and metal scraps). Yes, this included empty soda cans.
- Provide ample supply of flattened corrugated cardboard boxes to protect the underside of the tough sealing membrane.

Provide good quality landscaping cloth. This can be used to wrap the perforated gas collection ducting and help filter out soil dust that could, over the years, start to clog the ducting.

**Sump Pump Pit:**
We have never had any flooding. They glued a little window into the Sump Pump Pit Cover and then sealed the Cover in place. In a rainy period, we can shine a light into the little window and assure ourselves that there is no water accumulation. The continuous Radon venting helps prevent the water accumulation.
Basement Floor:
The primary gas collection is through the basement floor. They drilled a hole through the concrete, removed soil to create the required open space under the floor. They sealed in a vent pipe connected to the Radon ventilation system. In our house the vent pipe is routed through the crawl space and out through the garage, through the attic and out a roof vent. The ducting is 4.5 inch outside diameter PVC drain waste and vent pipe.

Crawl Space what to expect:
4-5 inch diameter corrugated and perforated flexible plastic ducting will be placed around the periphery and plumbed in to the Radon venting system.

A very tough plastic sealing membrane will be sealed to the concrete foundation with construction adhesive.

Ventilation is recommended, initially, because the adhesive curing process does emit some fumes. The curing process is much shorter above 50 degrees F.

The manometer indicates if the system is maintaining the required vacuum under our house. Loss of this pressure differential would indicate pump failure or leakage in the sealing membrane and time to call the contractor.
Crawl Space Continuing Care:
Since we use our crawl space extensively for storage, we keep adding any larger flattened corrugated boxes we receive (all staples removed!) on top of the sealing membrane. Of course we are careful about footwear as we crawl or duck walk around in there.

Exhaust Vent:
The collected gas is vented above the roof line to prevent its reentering the home. Some homes have it vented at the side of the house through an 'up spout'. In our case, we selected the option to have the ducting run through the garage, trough the attic and out through a roof vent.
Exhaust Fan:
The Exhaust Fan is located in the attic. It is wired with a master switch mounted in the garage ceiling. Our fan is quieter and is a higher quality than many. It cannot be heard from any of the bedrooms nor the outside. A soft hum can sometimes be heard, however, from the Bedroom closet that has an attic trapdoor and also may be heard from the hallway. After a rainy period, the fan works harder to pump out the added moisture and is noisier for a while. When dryer weather returns, it quiets back down. I wonder if it is realistic to mount it to the attic trusses with vibration isolators so it could not be heard at all? I do not think anyone else has ever noticed any sound from our Radon mitigation system. The transverse duct in the attic is insulated to prevent any water vapor in it from freezing.
Results:

The Radon Mitigation process took part of a day. After the Radon Mitigation process, we used another test kit. Its results were 1.3 pCi/l.

The Radon level reading before Mitigation was 12.4 pCi/l.

Since the mitigation (18-Dec-2006), the readings have remained 1.3 and occasionally 1.4 throughout these winter months.

Two and half years after the mitigation, the readings with our long-term monitor remain in the 1.2 - 1.4 range and vacuum pressure remains at 0.7.

We are now breathing easy and are confident in using our finished basement for family guests!