

Maryland Square PCE

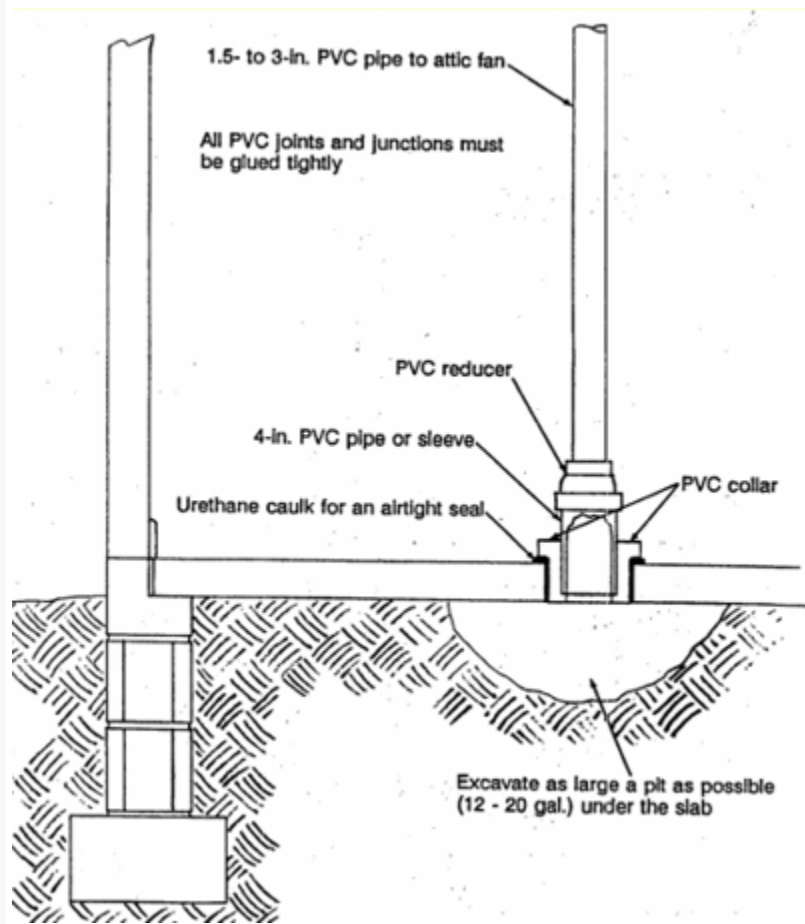
Home Mitigation with Sub-slab Depressurization (SSD) Systems

Home Mitigation Systems — The home mitigation systems used to reduce the levels of PCE found in indoor air due to vapor intrusion are called sub-slab depressurization (SSD) systems, and typically cost from \$2,000 to \$20,000 per home. These systems are commonly used to mitigate intrusion of radon gas, which occurs naturally in some areas of the country. The data indicate that SSD systems can reduce vapor levels by as much as 99%.

The SSD system works by preventing soil gas entry. Installing an effective SSD system involves sealing the foundation and depressurizing the soil. Sealing cracks and holes with epoxies and caulks, and sealing the crawl space from the rest of the house are all methods with some application. Suction puts the soil at a lower pressure than the inside of the home, preventing inward migration of soil gas.

Sometimes the system requires modification to work effectively, because subslab footers or impermeable soils may prevent the suction field from extending across the entire footprint of the slab. In these cases, modifications may include installing a bigger fan and/or installing additional sumps to help extend the suction field.

Installing an SSD system involves sinking ventilation pipes below the foundation and then continuously pumping out air by running a small fan. SSD systems were developed to mitigate intrusion of naturally occurring radon gas, but are equally effective for mitigating the intrusion of solvent vapors.



Through a voluntary program of indoor air testing, the NDEP identified homes where PCE concentrations exceeded the interim-action level of $32 \mu\text{g}/\text{m}^3$ (Note: indoor air samples were collected in fall, 2007 and in early spring, 2008). The NDEP offered to install home mitigation systems (SSD systems) in these homes, at no cost to the homeowner. After the SSD systems were installed (Oct/Nov 2008), post-mitigation samples of indoor air were collected and analyzed (Dec 2008). Post-mitigation testing identified several homes where system modifications were needed to reduce PCE levels in indoor air to less than the NDEP's interim-action level.

The NDEP collected samples of indoor air after system testing and modification were completed. The modified SSD systems succeeded in reducing the concentration of PCE to less than the interim-action level.

The University of Nevada Cooperative Extension Service hosts a [webpage with more information about mitigation of naturally occurring radon](#) . The SSD system installed to mitigate a home for radon is the same type of system used to mitigate homes for vapor intrusion of PCE.

The U.S. EPA also provides information on radon and SSD systems in a "[Consumer's Guide to Radon Reduction](#)". Although the information provided in this guide is aimed at radon reduction, the advice and guidance on reducing radon gas in the home also applies to reduction of PCE vapors resulting from vapor intrusion.