

Information Note for Charcoal Canisters

General Background

The passive radon canister consists of the following materials:

1. 8 ounce metal can with lid (4 inch diameter by 1 1/8 inch deep)
2. 70 +/- 1 grams of 6 x 16 mesh activated charcoal
3. metal screen, with an openness of at least 30 – 50 percent
4. removable, internally expanding retaining ring
5. pad material attached to the inner surface of the lid
6. 13 inch strip pliant vinyl tape

Activated charcoal has a large affinity for several gases and vapours including radon-222 (Radon). Radon is absorbed onto the charcoal grains and decays to several particulate decay products: radium A (polonium-218); radium B (lead-214); radium C (bismuth-214); radium C' (polonium-214); and radium D (lead-210). Radon concentration is determined by counting the gamma ray emissions of both lead-214 (295 keV and 352 keV) and bismuth-214 (609 keV). This is possible due to the relatively short half-life of these progeny. Within 3 hours the progeny are in equilibrium with radon-222.

The passive nature of activated charcoal allows both absorption and desorption and in addition the absorbed radon undergoes radioactive decay during the exposure period. Therefore, the canister cannot uniformly integrate over the entire exposure period. However, the canisters can be calibrated to yield precise results for radon concentrations in structures during the deployment period of 48 hours.

How To Use

Place the canister in the normal occupancy area of the lowest lived-in level of the home. **If** the basement has finished rooms such as bedrooms, playrooms, family rooms, **then** place the canister in an area occupied for more than 4 hours per day. **If** the basement does not have any areas that are occupied by someone for more than 4 hours a day **then** test on the main level.

The canister should preferably be placed approximately 40 cm (16 inches) from an interior wall, at a height corresponding to the air you breathe (about 3 to 6.5 ft from the floor). Health Canada also recommends that radon detectors be placed in an area that is at least 50 cm (20 inches) from the ceiling and 20 cm (8 inches) from any other object so that normal air flow around the detector is not obstructed. If the detector is placed close to an exterior wall, its placement should be approximately 50 cm (20 inches) from the wall. It should NOT be placed in a drawer, closets, cupboards, sumps, crawl spaces or nooks within the foundation because the air there is not typical of the air you breathe within the occupied areas of the house.

The canister should NOT be placed in drafty areas (such as those close to windows, doors, fans or heating/ventilating/cooling vents), or areas of high moisture (such as a bathroom, laundry room, kitchen etc.), or areas near heat (such as over radiators, near fireplaces or in direct sunlight), or near electrical appliances such as televisions, stereos, or speakers. Closed

building conditions should be observed during the radon measurement and 12 hours prior to the exposure period. During closed building conditions, all windows and external doors should be closed and all external-internal air exchange systems should be turned off, however normal entry/exit are acceptable as well as the normal operation of attic fans (to control temperature and humidity), combustion or furnace makeup air supplies, permanently installed energy recovery ventilators, permanent radon mitigation systems and air conditioning systems that recycle interior air. **DO NOT PLACE THE CANISTER IN WATER.**

The 48 hour exposure must be done in one single period and returned quickly after the exposure. Delays in couriering the canister after exposure will result in less accurate results.



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