

# BIOMATION ENVIRONMENTAL WATCH



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A Newsletter For Professionals Who Test for Radon

## Did You Know.....

Health Canada has proposed lowering the radon guidelines for Canada from 800 to 200 becquerels per cubic metre. This recommendation has been supported in a report by the Radon Working Group.

**Test for Radon**

Use the radon gas monitor in homes, schools, workplaces, mines, caves, health spas or outdoors!

E-PERM is the short name for **Electret - Passive Environmental Radon Monitor**

## E-PERM<sup>®</sup> - OUTSTANDING Radon Measurement Tool

### Become a **RADON** Measurement Professional

The E-PERM<sup>®</sup> system is a truly outstanding radon measurement tool for achieving the best accuracy and reliability.

*By owning your own equipment, you save money compared with the cost of outside laboratory services.*



It is the ideal radon gas monitor for radon testing companies, environmental consultants, building inspectors and government laboratories because of its ease-of-use, high accuracy and low cost. Testing companies that have used other methods find that Electrets are the all-round best and most cost-effective radon monitors for both screening tests and long-term confirmatory tests. You will benefit by being able to make your own inexpensive on-site measurements. It replaces charcoal screening detectors for short-term measurements and replaces alpha-track

detectors for long-term measurements at a much lower cost per measurement. You will become one of the many E-PERM professionals throughout the world that are satisfied users of the electret ion-chamber method.

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### ▶ **It's All That you Need!**

With the Basic Introductory Kit, you have all of the testing equipment needed to handle a business level of about seven homes per week. The kit is very affordable. It includes an instructional video. A set of reference electrets is included with the kit to verify correct operation of the readout unit. Additional radon detectors and electrets can be added as your volume of radon work grows.

### ▶ **It's Easy to Use**

It only takes a few seconds to measure the electret voltage at the measurement location using a small portable voltmeter, the Model SPER-1A Surface Potential Electret Reader. The final exposure voltage subtracted from the initial exposure voltage is divided by a calibration factor and the number of days of exposure to give the average radon concentration value, expressed in Bq/m<sup>3</sup>. The radon level can alternately be expressed in picocuries per litre (pCi/L) where 1 pCi/L=37 Bq/m<sup>3</sup>. You can use a convenient PALM hand-held computer to calculate the radon level on-site, or you can enter the readings into the WINSPER software on your office computer to print a customer letter and report.

### ▶ **Radon Surveys**

For larger radon surveys you can use a supplied template to produce reports in Excel. The model SPER-2 reader is available to automatically record a quantity of E-PERM readings, calculate the radon levels and transfer the results to the computer.

### ▶ **Permanently Calibrated**

The system is designed so that correct operation can be easily verified to ensure reliable and accurate results. Checking the readout unit regularly with the reference electrets is important. Two reference electrets are provided to guard against possible reference electret malfunction. Radon measurement proficiency can be demonstrated by participating in a radon measurement intercomparison program. Because the radon sensitivity of the E-PERM® system is dependent primarily on the manufactured dimensions of the electret ion-chamber, frequent calibration is not necessary.

## **Your Image is Important**

Successful radon testing companies find that a high quality, professional approach is an essential part of their company image.

**The E-PERM System** will contribute to your professional image. The E-PERM monitors that are left in the home have a high quality, professional appearance, as does the readout unit and the computer output report. The client is likely to place a high level of credibility in your firm and is likely to recommend your firm to other home owners.



Because results are immediately available, you can finalize the testing on the spot without a further phone consultation or visit. If the radon level is low, you can provide peace of mind and assure the home owner that no further tests are needed. If intermediate or high radon levels are found, the options and costs of follow-up work can be discussed frankly and professionally. The E-PERM system is sold only to reputable, responsible firms that will provide professional radon services with a high level of quality and integrity.

## ▶ Reliable and Effective



**Tamper-Resistant Testing Box**

A home with a high radon level is a health hazard to its occupants. Purchasers will want written assurance the home they are buying has been tested and has an acceptably low radon level. The seller will need a radon test when preparing the house for sale. The test duration is not critical because the electret integrates all variations in the radon concentration and provides an accurate average reading over the exposure time. The longer the reading, the more representative of the true average the measurement will be, although an exposure beyond seven days does not increase

significantly the quality of a short-term radon test. A shorter test of three days is often preferred for faster results with only a slight increase in variability.

*Where fast response is essential, such as for a real estate transaction, a two day test will normally determine whether or not the house meets the Health Canada radon guideline of 800 Bq/m<sup>3</sup> or the proposed 200 Bq/m<sup>3</sup> guidelines.*

For a short-term test, only two brief visits to the house are usually needed: the first is to place two or three E-PERM monitors in the house; the second visit is arranged with the client for a convenient time, usually three to seven days later, to retrieve the monitors and to pick up the cheque. Use the readout unit to determine the radon level on the spot. A written computer report or a letter can then be generated and mailed to the client. Whenever possible, a long-term E-PERM test of six to twelve months is recommended.

## Measurement Applications

- Short or Long-term measurements of radon in buildings
- Dissolved radon in water
- Radon in outdoor air
- Radon-emanating radium concentration in soil or building materials
- Undisturbed radon flux from the ground, uranium mill tailings, phosphate stacks or other surfaces
- Thoron in homes, thorium handling and storage areas for outdoors
- Environmental gamma levels

## ▶ Healthy House Award Winner



Back in 1988, soon after the E-PERM was developed by scientists at Rad Elec, the housing Reaserach Centre in Cleveland, Ohio presented Rad Elec with the prestigious “Healthy House Award.” Judges’ comments:

- “Elegant engineering and low per test cost.”
- “Immediate read-out and multiple readings make it of great interest to professionals.”
- “Appears to have considerable potential for use in surveys of schools and public buildings.”

## ▶ New Recommended Radon Guideline

The Radon Working Group of the Federal Provincial Territorial Radiation Protection Committee has proposed the following radon guidelines:



**Radon Flux Monitor**

- Remedial measures should be undertaken in a dwelling whenever the average annual radon concentration exceeds 200 Bq/m<sup>3</sup> in the normal occupancy area.
- The higher the radon concentration, the sooner remedial measures should be undertaken. At levels of 800 Bq/m<sup>3</sup> or above, these measures should be completed within one year.
- When remedial action is taken, the radon level should be reduced to a value as low as practicable.
- The construction of new dwellings should employ techniques that will minimize radon entry and will facilitate post-construction radon removal, should this subsequently prove necessary.

## ▶ Radon in Water

Radon in water can be inexpensively and accurately measured with the E-PERM System. The technique involves releasing radon from a measured sample of water into a known closed air volume. No scintillation liquid is required; the E-PERM is suspended over the water sample from the lid of the measurement jar. The resulting radon concentration in air is a measure of the radon activity in the water. Analysis is identical to the radon in air determination, but using parameters derived specifically for this application.

## ▶ Minimize Costs



**Electret**

It is the best and fastest growing method as demonstrated by the outstanding performance of companies using the E-PERM system in the USEPA Radon Proficiency Program. The E-PERM system had the highest pass rate typically (94%) and was the most popular method used. The E-PERM system is available to you with the initial purchase of the Basic Introductory Kit. This kit will provide you with techniques for minimizing cost and maintaining standards of accuracy and quality. It will teach you to use the system without any additional expense except for the replacement of any electrets which become exhausted in use.

® E-PERM is a registered trademark of Rad Elec, Inc.

# Radon Flux

The measurement of radon flux from the ground or other surfaces is useful for determining the radon emanating potential of a building site or to meet regulatory measurement requirements for uranium mill tailings or gypsum stacks. When the E-PERM Flux Monitor is placed on a radon emanating surface, the radon enters through its window and exits through the vents.

# Maintain Standards

**Contact BIOMATION for your Radon Equipment needs.**

- ✓ Radon Monitoring Products and Equipment
- ✓ Gamma Monitoring Systems
- ✓ Safe Training Simulators

# BIOMATION

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