

QUALITY MANUAL

METHODS FOR MEASURING RADON IN AIR AND WATER
WITH CHARCOAL CANISTERS, LIQUID SCINTILLATION VIALS,
ELECTRET ION CHAMBERS AND CONTINUOUS RADON MONITORS.

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ORGANIZATIONAL CHART

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The QA/QC Officer is organizationally independent of the Laboratory analysis and reporting to avoid conflict of interest.

All the individuals cited in the organizational plan are involved in their respective capacity to fabricate radon collectors, shipment, handling, analysis, data interpretation and in the management of the radon project.

See Attachment A for listing of Technicians/Specialists affiliated with RTCA's Radon Measurement Business in New Jersey.

QUALITY POLICY STATEMENT:

The responsibilities of the staff listed on the organizational plan fit their respective job description with some overlapping in the lower tier positions.

The QA officer oversees the entire radon project in terms of the quality of the work and makes sure it meets the standards set for such work. EPA established the standards for radon measurements, exposure protocols and result interpretation, with occasional revisions. RTCA follows the procedures and recommendations advanced and approved by EPA.

The QA officer oversees the results of the different analytical procedures reported by the Laboratory Director and makes recommendations and adjustments accordingly to ensure quality measurements with quality results. The QA officer advises the President and the Laboratory Director on a regular basis on the assessment, precision and quality of the measurements using the monthly and blind calibration. The monthly QC report includes a statistical summary of the duplicate collector performance that is the most important way of assessing the status of the entire analytical operations.

The QA Officer and the Laboratory Director keep Company management informed on the steps taken to fix a problem and to ensure quality work. Any corrected action is documented and enforced immediately after a discrepancy or deficiency is discovered.

The Company's analytical data is resident on the computer file server and network. The Company's computer system is backed-up nightly; and a weekly back-up tape is secured in off-site storage. Analytical reports, quality control measurements and test information forms are batched together on a monthly basis for storage purposes, as well as for use of retrieval of information, if necessary. The Company retains hard copies of daily analytical reports and quality control measurements for radon in air for a period of at least five (5) years and for radon in water for a period of at least ten (10) years. The Company retains customer test information forms in on-site storage for radon in air for a period of at least five (5) years and for radon in water for a period of at least ten (10) years.

The Company reviews all new work to ensure that it has the appropriate facilities and resources before commencing such work. When processing an order, the Company's customer service representative checks with the Production Manager for availability of test kit inventory and estimated shipping date. Although the Company cannot predict when test kits will be returned for analysis, the Company has the analytical capacity to handle a much larger workload than it currently processes in an eight-hour work shift. If the Company were to experience an unusually high return of test kits for analysis at the same time, the Company could add one or two additional shifts per day in the lab, and the associated data processing could be performed by temporary labor.

PROTOCOLS FOR MEASUREMENT TRACEABILITY (COLLECTOR CUSTODY):

Trace-ability is linked to an individual collector identification number. This is true for all methods used at RTCA for radon detection in both air and in water. The collector and the sampling protocol information card are common coded with the same identification number eliminating sample mix-ups and uncertainties. Charcoal devices are pre-weighed when the collectors are bar-coded prior to packaging for shipment. RTCA's radon measurement business certification number is stamped on test kit packaging. The test kits are shipped expeditiously via United Parcel Service. A log of the daily shipments is permanently kept at RTCA. If a customer purchases a test kit on-site at the RTCA facility, then the invoice will reflect that.

The placement of the radon collector is always traced via information entered on the exposure information card that also lists several other parameters such as name and test address, placement location, start and stop time of the test and general conditions existing in the house during the test.

Radon collectors returned to the laboratory after exposures are logged in daily by their individual identification number and /or client name. The sample custodians at RTCA are responsible for the daily log report of received collectors. A permanent record is maintained via RTCA's computer database.

The Company calibrates the analytical balances to certify that the weights of radon devices taken before and after exposure are traceable to a standards laboratory. The Laboratory Director maintains Certificates of Calibration. Before analysis, the returned collector is weighed to determine the water vapor acquired during exposure. This applies to the charcoal methods for radon collection only. The pre-weight information is subtracted from the post-weight to obtain the net water gained by the radon collector. This information is recorded permanently and is used to determine the appropriate calibration factor needed for the calculation of the radon concentration. Other parameters needed for complete trace-ability are:

1. Time and date of analysis.
2. Exposure start and stop time and dates.
3. Id. No. of analyzer used.
4. Analyzer type and detection efficiency or calibration factor
5. Background gamma count in the region of interest.
6. Alpha background in the region of interest.
7. Gross gamma count in the region of interest for charcoal canisters.
8. Gross alpha count in the region of interest for the liquid scintillation charcoal method
9. Gross ionization or voltage drop in electret ion chambers
10. Background contribution for electret ion chamber in voltage drop.
11. Calibration factor corresponding to the sampling period and the amount of water gained by the charcoal canisters.
12. Calibration factor for radon in water analysis dependent on the radon standard solution.
13. Calibration factor for the electret ion chamber detectors obtained from exposures in a calibration facility with known radon concentration

14. Decay factor for all methods except for electret ion chambers

15. The continuous radon monitor (CRM) is calibrated initially by the manufacturer, in a traceable standard radon atmosphere. Every six months the monitor is recalibrated. The CRM is equipped with a battery that operates for at least a year. If the battery becomes low, the CRM will not be able to start a test.

Using all the information recorded on the information card and the laboratory pre-analysis test procedures mentioned above, the computer software program automatically calculates the concentration of radon at the time of sampling. The information card with the client's recorded exposure data is stored in the permanent archives.

The necessary parameters noted above are used in the data reduction formulas listed in the appendices to calculate the radon concentration and the lower limit of detection (LLD). If the need arises to cross check the computer calculations, then the formulas listed in the appendices can be used for manually calculating the radon concentration.

The test data of the CRM is accumulated in hourly records and stored in non-volatile memory. At the end of each test period (48 hours/or 2 days to 240 hours/or 10 days), the recorded information is uploaded from the CRM to the computer. The calculated hourly radon concentrations and temperature readings are used to generate a graphical representation of the data, with a table of average values. Customized test reports are automatically generated and can be printed in the field. Secondary radon testers obtain immediate results by connecting to a remote file server via modem. The server faxes test reports to the secondary tester. Hard copies of the test reports are reviewed, signed by the Radon Measurement Specialist and mailed the next business day.

INVENTORY OF APPROPRIATE RESOURCES AND FACILITY. The Status of the Laboratory:

Every aspect of the radon measurement process is reviewed on a daily basis to make certain that there is an adequate supply of freshly constructed or regenerated collectors and detectors to meet the demand. Radon collectors of the 3 and 4 inch size canisters are loaded with exactly 50 g and 90 g of freshly activated carbon respectively and they are stored in inventory. The liquid scintillation vials are loaded with 2 g of activated carbon from the same lot and batch of charcoal as the canisters. They are prepared in advance and remain sealed until they are sent out for a radon test. Fabrication of new radon collectors and detectors goes on daily, with continuous maintenance of the existing stock for prompt shipping.

Liquid scintillation glass vials for radon in water analysis are prepackaged and are available in large supply for prompt shipping with instructions for sampling.

RTCA's long-term electrets, Ra-Dome™, are prepared in advance. Ra-Domes are registered for their respective application and are labeled with a bar coded identification number before they are shipped out for radon testing. The Ra-Dome electret configuration has a raised electret for a more uniform distribution of the surface charge.

The Ra-Dome electrets are charged to between 700 - 800 Volts and then are stored for a minimum of one month in protective caps in a low radon environment. Their surface volt potential is followed for up to one month for possible voltage drift until they are shipped for radon testing.

The Company reviews all new work to ensure that it has the appropriate facilities and resources before commencing such work. When processing an order, the Company's customer service representative checks with the Production Manager for availability of test kit inventory and estimated shipping date. Although the Company cannot predict when test kits will be returned for analysis, the Company has the analytical capacity to handle a much larger workload than it currently processes in an eight-hour work shift. If the Company were to experience an unusually high return of test kits for analysis at the same time, the Company could add one or two additional shifts per day in the lab, and the associated data processing could be performed by temporary labor.

All analytical systems are maintained operational at all times by performing the daily routine QA and QC checks, including analytical balance calibration, analytical systems performance checks with radiation standards, background radioactivity measurements with unexposed collectors or detectors and computer software performance. A look at the data from day to day operation is a good indicator of consistency and reproducibility. In situations where questions arise, control charts can be very useful to identify a possible discrepancy and correct it.

The computer system required for handling all the information for analysis and calculation is tested and its integrity is evaluated daily at the beginning of a workday and after 2 hours of use.

The voltage meter that measures the surface potential difference initially and after the exposure of an electret ion chamber is terminated, is checked daily with a reference voltage source.

The analytical balances are auto-calibrated at the beginning of each day with NIST tolerance S calibration sources. Analytical balances are required with all methods that use charcoal collectors for radon testing. The Company calibrates the analytical balances to certify that the weights of radon devices taken before and after exposure are traceable to a standards laboratory. The Laboratory Director maintains Certificates of Calibration.

The analyzer gamma counting systems used for the 3 and 4 inch charcoal canisters are aligned daily with a cesium radioactive source and their counting efficiencies in the gamma energy region of interest is verified daily with certified Ra -226 / Radon -222 standards with known radon concentration and with the same counting geometry. The counting time is 10 minutes. Any deviation above or below 2% from one day to the next is investigated. The counting systems gamma background is verified with unexposed charcoal collectors in the same energy region of interest on a weekly basis and more frequently if the need arises. The counting time is 10 minutes.

The RTCA 3" and 4" canisters have no inherent radiological background in the region of interest. The background effect is usually from cosmic radiation that is nearly constant at RTCA. Measurements of background that show sensitivity above the lower limit of detection (LLD, are investigated. Field blanks offer an additional check on the effect of background on the LLD.

The liquid scintillation analyzer used for radon measurements in air and in water is aligned with a liquid tritium source and its alpha counting efficiency is determined daily with duplicate Ra / Rn certified sources in the region of interest using the same counting geometry. The analytical method is the EPA Liquid Scintillation Method 913.0 (Pia, H. and Hahn, P., 1993). The counting time for radon in air analysis is ten minutes. The counting time for radon in water analysis is 30 minutes. Deviation in counting efficiency of more than 2% is investigated. The background is measured daily at the same counting geometry for the same length of time with duplicate unexposed vials at the same counting geometry. Any deviation from the LLD is investigated.

Potential drop must be calibrated daily and in between measurements with a reference voltage source. Any deviation by 2 volts from the reference calibration source triggers an investigation. The voltmeter should be used at nearly the same temperature for initial and final voltage readings after exposure. The long-term electrets supplied by RTCA eliminate the possibility of voltage drift due to the temperature difference during the readings by requiring that the electrets be read at the RTCA facility in an environmentally controlled environment.

The background contribution to the Rad Elec. electret returning after an exposure is estimated for different environments while the background contribution to the RTCA electret ion chamber is measured directly by using a second chamber that is impervious to radon and senses only the background.

The CRM's electronics perform continuous self-checks and if a malfunction is detected, the monitor will not report test results.

Each member of the staff has the technical knowledge and experience for their assigned tasks. The duties and responsibilities of the technical assistants overlap making certain that the appropriate facility and resources are available at all times before commencing work.

Instructions and Test Information Card for Deploying Charcoal Canisters are attached. See Attachment B.

See User Manual for instructions for deploying continuous radon monitor.

PROCEDURES FOR SAMPLE HANDLING

1. Samples received from the field are handled by logging all the entries recorded on the sample information card. Start & stop time information is scanned into RTCA's computer database by an optical card scanner.
2. Observing the radon collectors to make sure their integrity was not violated. Make sure the seal labels on charcoal canisters and the screw caps on liquid scintillation vials were properly fastened to ensure air tightness after the end of exposure.
3. The condition of the electret ion chamber must be checked before and after the end of exposure to observe if any deviation from the normal use is encountered. In the RTCA Ra-Dome, the exposure is terminated by taping the sample ports tight and by sealing the ion chamber in an aluminized bag that is impervious to radon.
4. Charcoal collectors are post weighed to look for unusual trends or irregularities in the amount of water gain. An experienced technician will initiate an investigation if unusual data on water gain are observed. Water samples for radon analysis are observed to see if the vials are completely filled without air bubbles or air space before proceeding for analysis.
5. Electret ion chambers are not affected by humidity during exposure but caution should be exercised by reading the electrets in an environment where the temperature is nearly constant.
6. The collectors are ready for analysis if their integrity was not violated and the information recorded on the sample card is in accordance with EPA sampling protocols such as the duration of sampling and appropriate placement in a home.

Also, the arrival of the collectors at RTCA must be timely to ensure analysis that is compatible with the principle and the method of measurement. For radon in air and in water using the gamma and alpha analytical methods the collector arrival time should not exceed 10 days. Since, express or next day mailing is standard procedure at RTCA, radon test samples generally arrive within 2-3 days after the end of exposure. The return time for electret ion chambers is not as critical as charcoal collectors because there is no radon decay involved after the end of testing.

7. The CRM should be handled with care and be exposed according to EPA protocols. The CRM should not be exposed in a location with large electric and magnetic fields, or in conditions of extreme temperature and humidity variations. By following EPA protocols on placement, the monitor will discriminate against thoron. To avoid data transmission errors, make sure the cable is firmly connected between the CRM and the computer. Never disconnect the cable during the start test or stop test procedures.

Where a sample or portion of the sample is to be held secure (for example, for reasons of record, safety or value to enable check calibrations or tests to be performed later), the laboratory shall store the sample in a fireproof locking file cabinet to protect the condition and integrity of the sample. However, since all of the samples that the laboratory analyzes have a half-life of approximately 4 days and need to be analyzed within 12 days after taking the sample, there is not a great need to secure the integrity of samples over a long time period. The company will rely on the courts for disposition of any samples in question.

PROCEDURES FOR RESULTS REPORTING

Analytical results are batched daily and checked for discrepancies before releasing information to clientele.

Detectors are sorted for analysis by type of service associated with client. Priority service entails processing of detector the same day it is received at the lab for analysis. Priority service is geared to accommodate the Company's nation-wide network of professional testers primarily involved in residential real estate radon tests. Standard service entails report generation within a week of receiving detector at lab for analysis. Standard service is geared for governmental survey work. All of the Company's analysis results are reported on stationary with a pre-printed disclaimer. The results are reported and interpreted according to EPA published recommendations. For tests conducted in New Jersey, results are reported and interpreted according to NJ DEP published recommendations. Test methods are clearly identified on the results report. Each results report includes the signature of the Laboratory Director, which is accomplished through an electronic identification of the Laboratory Director's signature.

A results report may be revised and reissued, if the client indicates to the lab that the exposure time information used to calculate the result is incorrect and needs to be updated. Once the test record file is updated with correct exposure time, the record is recalculated and a new report is issued. In this case, the report will be stamped "Report Reissued".

The report of the test results obtained with the CRM can be generated by clicking the report/print buttons from the monitor's operating software. To print or fax the client report, click the printer icon on the toolbar.

PROCEDURES FOR CALIBRATION AND MAINTENANCE OF EQUIPMENT:

The calibration and performance of all types of RTCA charcoal collectors for radon in air with their specific analytical system was verified initially in a radon calibration facility traceable to NIST, at different conditions of exposure such as radon concentration, humidity, temperature and length of exposure. For radon in water, the system calibration is done with certified standards of radon in solution.

Electret ion chambers are initially calibrated in a radon calibration facility traceable to NIST under different conditions of radon concentration and time of exposure.

To maintain continuous calibration, the RTCA collectors or detectors are spiked on a monthly basis by having six replicate collectors of each type exposed in a commercial calibration facility traceable to NIST or equivalent Standards Laboratory. Bowser Morner of Ohio satisfies the requirements of a standard radon calibration facility traceable to NIST and is the source of the monthly spikes. The results of each spiked collector or detector must be within plus or minus 25% of the reference value.

The initial calibration of the CRM is performed by the manufacturer in a radon environment traceable to a standards laboratory. CRM's must be calibrated at least twice per year. At the end of one year, the CRM's batteries must be replaced. This is accomplished at the same time the unit is recalibrated.

INTERNAL AUDITS AND EQUIPMENT MAINTENANCE RECORDS

Annual internal quality systems audits are performed to verify compliance with all QA and QC requirements. The QA director observes day-to-day operations and if any QA and QC deficiencies exist he takes action to correct them immediately.

Audits are performed according to the following procedures:

1. Fabrication of the test collectors using the same materials and methods for reproducibility purposes and reducing variability. Identical canisters are filled with the exact amount of carbon from the same production lot and batch. RTCA has in stock a very large quantity of activated carbon from the same production lot to reduce the variability encountered with mixed production lots. The fabricated radon collectors are regenerated at the same temperature overnight and sealed airtight with a seal label until the time of exposure. After exposure they are resealed airtight with a fresh seal label. After analysis the collectors are recycled for new tests. The collection efficiency of the collectors after several exposures and recycles was found unchanged. This is also confirmed with spiked radon collectors that have been routinely recycled several times.

The same QC steps and procedures are used for the fabrication of liquid scintillation (LS) radon collectors. The LS type collector is used for a single exposure and it is not recycled. Clean and unused 20 ml glass vials are used to collect water for the measurement of radon. They are prepackaged, stored and shipped out upon request. Analysis of the water sample is carried out in duplicate unused 20 ml glass vials for a one-time use.

Electret ion chambers of a specific type are manufactured identically in terms of materials and size. Sensitivity is a function of the thickness of the Teflon™ electret disk used in the ion chamber. Teflon disks from the same production lot are desirable for mounting in holders made of conducting polymer resin. Since electrets in ion chambers are sensitive to radon leaking inside and to gamma radiation while in storage, they must be kept in keeper storage caps to avoid loss of charge caused by ionization due to these background sources.

The continuous radon monitor automatically and continuously performs three self-checks to ensure its proper operation. They are: Battery level, internal communications and collecting electrode voltage. These are performed even when the CRM is not actively recording radon data for a radon test. If the CRM fails any of the self-checks, it sets an electronic flag. Therefore, the CRM software looks for this flag prior to starting or stopping a test. The software notifies the user for every possible problem with the test and does not allow the user to download the data from the CRM and voids the test.

Tamper Detection: The alpha smart system provides five features to minimize tampering either with the device or the conditions during a test, by providing hourly measurements of temperature, a handle that allows the CRM to be secured in place, special diffusion vents to prevent tampering, no displaying of the hourly measurements for radon concentration, and due to its small size it can fit inside an RTCA TC-30 Centurion Tamper Detection Cage.

2. Proficiency Testing. The calibration status of RTCA's radon collectors and the analytical system is established on a monthly basis by having 6 replicate radon collectors of every type spiked in a radon calibration facility traceable to a primary standards facility such as NIST or its equivalent. EPA recommends calibration of the entire system only once per year. By using the spike method the analytical system calibration is accomplished on a monthly basis. The monthly spikes are done at different radon concentration levels and at different conditions of humidity and temperature to simulate conditions in the indoor environment. To meet EPA proficiency criteria, the accuracy or the relative percent difference of the RTCA test method should fall within plus or minus of 25% of the true value. The monthly spikes indicate whether the calibration factors used for calculation of radon concentration are still valid.

The calibration of the CRM is performed initially and at semi-annual intervals.

For daily analyzer performance checks, certified Radium - 226 / Radon - 222 standards are used. The gamma and alpha background of the analytical systems are conducted on a daily basis by using unexposed charcoal canisters and liquid scintillation vial collectors. Both instrument performance and background information are documented on a daily performance report. From this internal audit, the status of the entire analytical system is assured and maintained in good order.

3. The precision of the test method is determined by exposing duplicate tests in the same location in the field. The creation of control charts of duplicates on a monthly time frame provides the criteria for the monthly and annual performance of the exposure and analytical procedures. Radon tests conducted in duplicate in the same location are very useful in finding if the test was conducted according to test protocols and if the correct data were used on the sample information card. RTCA, analyses hundreds of duplicate tests per month and constructs separate control charts for duplicates averaging < 4 pCi/L or > 4 pCi/L in order to evaluate the integrity of the collectors, the measurement precision, the consistency of the analytical system and whether the proper test protocols and procedures were followed during exposure.

4. Field Blanks are a very important check on the behavior of radon collectors during handling storage and shipment. RTCA encourages radon testers to submit on a regular basis unexposed collectors that are handled in the same fashion as the exposed ones. Any deviation of the Blanks above the lower limit of detection (LLD), triggers an investigation to sort out the problem. RTCA analyses a minimum of 25 blanks per month internally and encourages radon testers in the field to include blanks as part of their QA QC process.

5. Reanalysis of radon collectors is performed when there is a question about the results. Usually a question arises because the radon tester has provided the wrong information about the test. Standard practice is for RTCA to recount the collector to eliminate the possibility of counting discrepancy before recycling. No radon collector is recycled or disposed until the results of the radon analysis are examined and approved by the Laboratory Director.

6. Equipment Maintenance Records. All equipment necessary for obtaining an accurate radon result are maintained in good order on a daily basis. The analytical balances used to measure the weight of carbon placed in each radon collector and to measure the pre - weight and post - weight of radon collectors used for a test are calibrated daily with NIST traceable class S weights. The counting system consisting of NaI / PMT analyzers are standardized on a daily basis using Radium - 226 / Radon - 222 sealed standards that have the same counting geometry as the test collector. The total gamma background on all the NaI / PMT counting systems is determined daily with unexposed collectors using the same gamma region of interest as with the standardization. The liquid scintillation counting system for radon in air and radon in water, undergoes the same maintenance using the appropriate alpha standard sources and blanks.

CORRECTIVE ACTIONS

The QA Officer assesses the QC data and determines if the QC measurements are acceptable or not. The Laboratory Director initiates and recommends corrective action when deemed necessary. For out-of-control situations, the QA Officer specifies corrective action. If corrective action is necessary, the Laboratory Analyst investigates all of the steps used to arrive at a result and to find the likely source of a discrepancy. Any situations that are found to be out of control are investigated and corrective action is taken and documented. The situation is monitored to see if the frequency of occurrence could facilitate in uncovering future discrepancies. The QA Officer then examines the written corrective action taken and approves or denies its implementation.

Control charts to observe trends in performance are very useful to evaluate QC. Using the method of Quality Control Charts, Tables, Calculations and Construction, which is recommended in item 261 of the NYS Environmental Laboratory Approval Program Certification Manual, periodic evaluation of the daily performance of the different analyzers is performed to evaluate the analytical system. Visual inspection of the daily performance checks usually is sufficient to verify the reproducibility and consistency of the entire system.

Standard Protocols to Deal with Discrepancies and Departure from Normal Procedures:

If a discrepancy or departure from the above audits is identified it is investigated and corrective action is implemented. A departure from previous established procedures and performance checks is easily identified. Anomalous data are scrutinized by double-checking the entire analytical system including the computer and every step taken to arrive at the final result. The laboratory management protocols are very concise and do not allow any departures from the set and documented policies and procedures.

Procedures for feedback and corrective action include investigation at the onset. Any departure from documented policies is investigated. The source of the problem needs to be identified: i.e. analytical equipment, test device preparation, analytical standards, field operations, analytical equipment and computer equipment. If the problem is chronic, analytical data may not be released.

For quality control samples, the control chart for duplicate exposures is based on a 28% RPD warning level and a 36% control limit for duplicates of 4.0 pCi/L or greater. For duplicates of less than 4.0 pCi/L, the warning and control levels are set at 50% and 67% respectively. Two successive warning level duplicates or one control limit violation triggers:

1. A call to the end user to determine if proper protocol for duplicate measurements has been observed.
2. Examination of the detector pair for structural integrity.
3. Evaluation of the analytical systems involved in the analysis of the aberrant pairs.

Any field spike with an IRE greater or less than 25% triggers:

1. Evaluation of the analytical systems involved.
2. Destructive evaluation of the detector in question.

Any field blank of greater than 0.3 pCi/L will result in:

1. An examination of the analytical system employed.
2. Examination of the aberrant unit along with a recount to determine the origin of any spurious factors that could effect the measurement.

The Company QA Officer maintains records of all daily QC activities, including control charts on a monthly basis. The QA Officer will immediately report control limit violations to the President. The Director of Analytical Operations will oversee all required corrective actions. The QA Officer maintains a log of all corrective actions.

Any problems encountered in the field with the CRM can be addressed by contacting RTCA. Troubleshooting is addressed by supplying solutions to problems such as use of the proper computer cable, the integrity of the cable connection. A valid test report can be issued only if the test is a minimum of 48 hours or a minimum of 24 hours if the test is conducted in New Jersey.

MANAGERIAL REVIEW:

The laboratory management conducts a review of its quality system and testing and calibration activities on an on-going basis throughout the year. A review of the procedures for routine analyzer QA and QC steps are conducted daily; QA measurements for blanks, spikes & duplicates are conducted monthly. Any discrepancies found are identified and corrected. A QC report is prepared on a monthly basis. The QC Report includes assessment, precision and completeness of measurement data accuracy through results from blind calibration measurements and spiked samples. The QC report also includes a statistical summary on all duplicate measurements and associated percentage variations. Although the Quality Assurance Officer prepares an annual report for management and state government contracts to summarize the Company's QA data, the Company cannot wait for an annual report to identify QA problems in the lab.

The Quality Manager prepares a final audit report and maintains an audit history that includes checklists, audit reports and corrective action plans.

Management reviews the quality system on an annual basis to ensure that procedures in the Quality Manual and Laboratory Methods Manual have been followed, to determine the effectiveness of the procedures in controlling the quality data and to identify the need to modify any of the laboratory procedures. Management reviews annually all areas described in the quality system, policies, work instructions, and records affecting the quality of work.

The Quality Assurance Manager initiates the audit and ensures that it is conducted in an efficient manner. The Quality Manager is trained in auditing techniques by reading and understanding the SOP and reference books related to internal auditing. During the audit the Quality Manager ensures that procedures are being followed and record their findings onto the audit checklist. Audit findings are reviewed with the staff responsible for the procedures audited. If the Quality Manager generates a deficiency report, the audited staff responds to initiate the corrective action. The corrective action must be completed within 90 days. Clients are notified immediately when audit deficiencies cast doubt on the correctness or validity of the calibration or test results.

RECORD RETENTION:

The Company's analytical data is resident on the computer file server and network. The Company's computer system is backed-up nightly; and a weekly back-up tape is secured in off-site storage. Hard copies of analytical reports, quality control measurements and test information forms are batched together on a monthly basis for storage purposes, as well as for use of retrieval of information, if necessary. The Company retains hard copies of daily analytical reports and quality control measurements for a period of at least five (5) years. The Company retains customer test information forms in on-site storage for a period of at least five (5) years.

In the event that a laboratory transfers ownership or goes out of business, the laboratory has developed a plan to ensure that the records are maintained or transferred according to client's instructions. All hard and electronic copies of analytical reports and customer test information forms for the past five years will transfer to the new owner for storage and safekeeping as part of the sales agreement. Should the company go out of business, records for government contract work will be returned to clients if requested; otherwise all hard copies will be destroyed.

DEALING WITH COMPLAINTS:

Should radon testers complain about the test devices during handling, shipment or after analysis, RTCA investigates its internal laboratory procedures and the exposure protocols used by the tester to trace the source of any discrepancy. Since RTCA radon collectors or detectors are shipped promptly with clear instructions for their deployment there is no room for complaint concerning quick shipment. Analysis of the test collectors is usually done the same day received or the next day at RTCA depending on the test method. Radon results exceeding the EPA recommended safe value (the action level) are reported promptly with interpretation and explanation about what steps to take to reduce the high radon concentration to an acceptable level. If the RTCA sampling and shipping instructions and protocols are followed by the radon testers there should not be any room for complaints. Radon results < 4 pCi/L, are usually reported the next day after analysis.

If there is a complaint about the radon results, an investigation is triggered to find the source of the discrepancy. Complaint is recorded on Log Form (See Attachment F). The radon tester is contacted immediately to interrogate him or her on the procedures and protocols used during the test. In almost every case the source of the discrepancy can be traced back to the radon tester who failed to follow the test protocols or marked wrong test information on the sample card.

Other sources of the discrepancy can be traced to a prolonged exposure of the radon collector that is beyond the usefulness of the charcoal method or due to delay in shipping the test collector back to the laboratory for timely analysis. Based on the findings of the investigation of a complaint, the decision is made whether to void the test and retest.

LABORATORY PERSONNEL TRAINING:

The laboratory technicians have a combination of experience gained through internal training and classroom education to perform all the tasks necessary to fabricate, maintain, ship and analyze radon collectors of any type used at RTCA. The training is acquired by participating in a two day radon course dealing with radon fundamentals, radon sources, radon and radon decay product measurement methods and techniques in air and water, sampling protocols, QA, QC and radiation safety. Candidates receive a certificate or become certified by passing successfully an EPA recognized written examination.

The on-site training deals with every aspect of the RTCA radon program including maintenance and operation of all the analytical systems. The personnel are trained and become well versed in the standard operating procedures from the time a test collector goes out for sampling until its return for analysis and measurement of the radon concentration. If the standard operating procedures are revised, the cover page clearly indicates the effective date of any change, the revision number and the signature of the approving authority.

The assistant laboratory technicians acquire expertise through on-site training in preparation and handling of radon test collectors for shipment and analysis. They are trained in the maintenance and operation of the analytical balances, and the counting equipment for the analysis of radon test samples in both in air and in water. Training is supplemented with classroom participation on the fundamentals of radon measurements and audio tapes that cover radiation safety for their personal protection and for other personnel working in the analytical laboratory.

Employee review of training materials and standard operating procedures pertinent to the employee's job function is documented. Each employee reviews and signs off on a Quality Policy Statement (Attachment C) that is communicated to employees during the training of new hires. The adherence to quality is understood, implemented and maintained by employees at all levels. The signed Quality Policy Statement is filed in the employee's personnel records.

The Technical Director and the Quality Assurance Officer must sign a Demonstration of Capability Certification Statement (Attachment D) for each employee performing a test. A copy of the Demonstration of Capability Certificate is filed in the personnel records for each employee performing a test method.

All employees must perform their specialized duties in conformance with RTCA SOP for Data Integrity. The Company requires new employees to read and sign a Non-Disclosure Agreement prior to starting employment. Management instructs the employee that all analytical work performed by the Company is confidential information and is only to be released to authorized clientele. The Company also requires employees to read and sign a Code of Ethics Statement (Attachment E) that addresses improper conduct and conflict of interest situations. The signed Non-Disclosure Agreement and Code of Ethics Statement is filed in the employee's personnel records.

Appendix 1

1. Data Reduction and Validation of 3 and 4 Inch Charcoal Collector

Results:

$$R_n = \frac{GN - B}{E \times CF \times TS \times DF} \text{ where,}$$

R_n = Concentration of radon during exposure period

GN = Gross counting rate, (cpm)

B = Background counting rate, (cpm)

E = Gamma counting efficiency of analyzer for the 3 and 4 inch charcoal collectors in the region of interest, (cpm) /pCi)

CF = Calibration factor based on the length of exposure and the amount of water gained.

TS = Exposure period, (minutes)

DF = Decay factor of radon from the midpoint of exposure until the time of counting.

2. The Lower Limit of Detection (LLD) for the 4 and 3 inch collectors is calculated from the following expression:

$$LLD = \frac{4.65\sqrt{Br}}{Bt}$$

Br = background counts

Bt = time background counted, (min)

Example:

A 4 inch canister shows a background $Br = 68$ cpm. Efficiency = 0.4203 cpm /pCi

$Bt = 10$ minutes. Exposure time $TS = 4$ days = 5760 minutes. Counted 72 hours after the end of exposure. Decay factor $DF = 0.404$ at the time of counting.

Water gain = 2.5 g Calibration factor $CF = 0.0518$ obtained from the calibration curve.

$$LLD = \frac{4.65 \sqrt{680}}{10} = 12.0 \text{ cpm. To convert to pCi/L then}$$

$$LLD = 12.0 \text{ cpm} / E \times CF \times Ts \times DF \text{ or}$$

$$LLD = 12.0 / 0.4203 \times 0.0518 \times 5760 \times 0.404 = \{0.24 \text{ pCi/L}\}$$

The 2 sigma error at the 95% confidence level =

$$\frac{2 \sqrt{\text{Gross Counts} + \text{Background Counts}}}{\text{Gross Counts} - \text{Background Counts}}$$

Appendix 2.

Data reduction and Validation of Charcoal Liquid Scintillation Vial Results:

1. Calculation of radon concentration

$$R_n = \frac{GN - B}{E \times CF \times TS \times DF} \text{ where,}$$

R_n = The concentration of radon, (pCi/L)

GN = Gross counting rate, (cpm)

B = Background counting rate, (pCi/L)

E = Alpha counting efficiency of analyzer in the region of interest

CF = Calibration factor based on the length of exposure and the amount of water gained.

TS = Exposure period, (minutes)

DF = Decay factor for radon from the midpoint of exposure until time of counting.

2. The LLD is calculated in the same manner as the charcoal canisters.

Example:

The LLD for a 20 ml vial sample with background $Br = 74$ cpm and counted for $Bt = 10$ min. is

$$LLD = \frac{4.65 \sqrt{740}}{10} = 12.6 \text{ cpm}$$

For a 4 day exposure $TS = 5760$ min

Counting efficiency $E = 5.45$ cpm / pCi

Calibration Factor $CF = 0.0013$

Decay factor $DF = 0.404$ when counted 3 days after the end of exposure.

12.6

$$LLD = \frac{12.6}{5.45 \times 0.0013 \times 5760 \times 0.404} = 0.7 \text{ pCi/L}$$

The 2 sigma error at the 95% confidence level =

$$\frac{2 \sqrt{\text{Gross Counts} + \text{Background Counts}}}{\text{Gross Counts} - \text{Background Counts}}$$

Appendix 3.

Data Reduction and Validation for Liquid Scintillation Radon in Water Results:

1. Calculation of radon concentration

$$\text{Rn (in water)} = \frac{\text{GN} - \text{B}}{\text{E} \times \text{DF} \times \text{V}} \text{ where,}$$

GN = Gross counting rate, (cpm)

B = Background counting rate, (cpm)

E = Alpha counting efficiency in the region of interest, (cpm) /pCi)

DF = Decay factor from the time of sample collection to time of analysis

V = Volume of standard, background and sample which is constant at (0.008 L)

Example:

A water sample for radon collected for analysis showed GN = 500 cpm

The background B = 5.71 cpm. The counting efficiency CF was 5.685 cpm /pCi and the decay factor DF was 0.404.

Since the volume of water sample analyzed is 0.008 L, then

$$\text{Rn (in water)} = \frac{500 - 5.71}{5.685 \times 0.404 \times 0.008} = 26,900 \text{ pCi /L}$$

To convert radon in water to radon in air equivalent, divide by 10,000

Example: radon in water is 26,900 pCi/l and radon equivalent in air is

$$26,900 / 10,000 = 2.69 \text{ pCi /L}$$

2. The LLD is calculated from $\text{LLD} = 4.65 \sqrt{\text{Br} / \text{Bt}}$

Br = Background counts

Bt = the time the background was counted

Example:

If Br = 5.71 cpm and Bt = 30 min then $\frac{4.65 \sqrt{5.71 \times 30}}{30} = 2.02 \text{ cpm}$.

If the analyzer Efficiency E = 5.685 cpm /pCi and the decay factor DF = 0.8217 then

$$\text{LLD} = \frac{2.02 \text{ cpm}}{5.685 \text{ cpm/pCi} \times 0.8217 \times 0.008 \text{ L}} = 54.0 \text{ pCi/L}$$

Appendix 3 continued

The 2 sigma error at the 95% confidence level =

$$\frac{2 \sqrt{\text{Gross Counts} + \text{Background Counts}}}{\text{Gross Counts} - \text{Background Counts}}$$

Example: Gross Counts = 500 x 30 = 15,000
 Background = 5.71 x 30 = 171.3

$$\frac{\text{The error} = 2 \sqrt{15,000 + 171.3}}{15,000 - 171.3} = 0.017$$

If Radon = 26,900 pCi/L \pm 0.017, then Radon = 26,900 \pm 457 pCi/L

Appendix 4.

Data Reduction and Validation for Electret Ion Chambers
(Ra-Dome & E-PERM)

Concentration Calculation:

$$Rn \text{ pCi/L) } = \frac{(V_i - V_f) - (B)}{CF \times T}$$

Where V_i = Initial voltage
 V_f = Final voltage
 B = Voltage drop due to background in Volts
 T = Exposure time, (days)
 CF = Calibration factor in Volts / pCi-L. days

In the Ra-Dome system, site-specific background is measured. In the Rad Elec. the background is estimated depending on elevation and the background history of the measurement location.

Example:

V_i = 700 volts
 V_f = 177 volts
 B = 23 volts in 365 days
 T = 365 days
 CF = 0.170 obtained from the calibration and,

$$Rn = \frac{(700 - 177) - (23)}{0.170 \times 365} = 8.1 \text{ pCi /L}$$

The LLD for the Ra-Dome = $4.65 \times S_b$ where $S_b = \sqrt{B_r / B_t}$

B_r = Background in volts
 B_t = Time background was counted (days)

Example:

Ra -Dome electret ion chamber exposed shielded from radon entry for 365 days showed a background of 23 volts

$$LLD = \frac{4.65 \sqrt{23}}{365 \text{ days}} = .061 \text{ volts/day} = \text{and}$$

The 2 sigma error at the 95% confidence level =

$$\frac{2 \sqrt{\text{Gross Voltage drop} + \text{Background Voltage}}}{\text{Gross Voltage drop} - \text{Background Voltage}} = \frac{2 \sqrt{523 + 23}}{523 - 23} = 0.09 \text{ or } 9\%$$

Appendix 5.

1. Data Reduction Validation for the RTCA E-Smart CRM:

Concentration Calculation:

$$R_n \text{ (pCi/L)} = \frac{\text{Total gross alphas} - \text{Background}}{E \times T}$$

Where:

Total gross alphas = All alphas or counts recorded during the sampling period

Background = 4.3 counts

T = Sampling time in Hrs., minus first 4 hours of sampling period.

E = Monitor sensitivity in alphas or counts /Hr/pCi/L = 16.2 cph/pCi/L

Example: A CRM sampled for 48 hrs.

Total gross alphas(counts) in (48-4) = 44 hours = 3,600 counts

Total background in 44 hours = 4.3 cph x 44 = 189.2 counts

E = 16.2 cph/pCi/L

$$R_n \text{ (pCi/L)} = \frac{3,600 - 189.2}{16.2 \times 44} = 4.8 \text{ pCi/L}$$

2. The Lower Limit of Detection (LLD) for the CRM is calculated from the following expression:

$$LLD = \frac{4.65\sqrt{\text{background}}}{\text{Time in hours minus first 4 hours of sampling}}$$

$$LLD = \frac{4.65 \sqrt{189}}{44 \text{ hours}} = 1.4 \text{ counts per hour (cph)}$$

$$\begin{aligned} \text{3. The 2 sigma error} &= 2x \frac{\sqrt{\text{Gross counts} + \text{background counts}}}{\text{Gross counts} - \text{background counts}} \\ \text{@ 95\% confidence level} & \end{aligned}$$

Example using the above information:

$$\begin{aligned} \text{The error} &= 2x \frac{\sqrt{3,600 + 189.2}}{3,600 - 189.2} \\ &= 3.6\% \end{aligned}$$

The error for 4.8 pCi/L is $\pm 3.6\%$ or $4.8 \text{ pCi/L} \pm 0.15 \text{ pCi/L}$

At 2.0 pCi/L, the error is 7.5%, at 4.0 pCi/L the error is 4.5% and at 10.0 pCi/L the error is 2.5%

Attachment A
New Jersey Technicians Listing

Attachment B

INSTRUCTIONS FOR PROFESSIONAL RADON TEST KIT

The RTCA Professional Radon Test Kit is harmless and easy to use. If you follow the instructions, this test will provide an accurate measurement of the Radon gas concentration at the point of placement.

TO BEGIN TEST

1. On the back of the test information card please print the client name and test location address as you would want it to appear on the RTCA Radon Report. Also, on the back of the information card print your company name and phone number, email or fax number.

2. Using a pencil, fill in the information cells on the front of the card regarding the start date and time (fill in AM or PM), time zone, average indoor temperature, and the floor level in which the canister(s) is being placed. See Figure 1.

3. Remove the lowest portion of the bar code label from the bottom of the canister and keep for your records. Then take the second bar code label and remove the paper backing and affix to the information card in the space provided. If you are performing side-by-side measurements with two canisters, affix the bar code label from the second canister on the same test information card in the space provided for side-by-side measurements. Do not affix second bar code label to same card if canisters are not placed side-by-side.

IMPORTANT: PLEASE KEEP A COPY OF THE BAR CODE NUMBER(S) FOR YOUR RECORDS.

4. Remove the canister's sealing label. Place the canister in the selected location.

5. Expose the opened canister(s) at the indicated site for 2 to 7 days. ANY exposure within this period will give an accurate Radon result for the indicated exposure period.

TO END TEST:

1. After 2 to 7 days, seal the perforated canister top with the resealing label which reads "Use This Label To Seal Perforated Side Of Canister".

2. Fill in the date and time that the test was stopped on the card (fill in AM or PM).

3. Place the canister and test information card back into the box.

4. For the most accurate results, mail the canister to RTCA the next business day. The canister must be received by RTCA within 10 days of stopping the test.

Figure 1
CORRECTLY MARKED
INCORRECTLY MARKED
Example ☐ ☒ ☐ ☐ ☒ ☒ ☒ ☒

INSTRUCTIONS FOR PROFESSIONAL RADON TEST KIT

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2. Using a pencil, fill in the information cells on the front of the card regarding the start date and time (fill in AM or PM), time zone, average indoor temperature, and the floor level in which the canister(s) is being placed. See Figure 1.

3. Remove the lowest portion of the bar code label from the bottom of the canister and keep for your records. Then take the second bar code label and remove the paper backing and affix to the information card in the space provided. If you are performing side-by-side measurements with two canisters, affix the bar code label from the second canister on the same test information card in the space provided for side-by-side measurements. Do not affix second bar code label to same card if canisters are not placed side-by-side.

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4. For the most accurate results, mail the canister to RTCA the next business day. The canister must be received by RTCA within 10 days of stopping the test.

Figure 1
CORRECTLY MARKED
INCORRECTLY MARKED
Example ☐ ☒ ☐ ☐ ☒ ☒ ☒ ☒

4" Charcoal Canister

INFORMATION CARD

Important: **COMPLETE** and **RETURN**
with **CANISTERS** to **RTCA**

PLEASE TYPE OR PRINT

NAME _____

COMPANY _____

STREET _____

CITY _____

STATE _____ ZIP CODE _____

DAYTIME PHONE # () _____

EMAIL _____

FAX # () _____

TEST LOCATION:

STREET _____

CITY _____

COUNTY _____

STATE _____ ZIP CODE _____

CLIENT _____

RADON CERT # _____

(If applicable)

PURPOSE OF TEST (Circle all that apply.)

SCREENING POST-MITIGATION

RESIDENTIAL REAL ESTATE

SCHOOL COMMERCIAL/GOVT

RETURN TEST KIT AND INFORMATION CARD TO:

RTCA

RADON TESTING
CORPORATION
OF AMERICA

2 HAYES STREET • ELMSFORD, NY 10523

For results call: 800-457-2366

**PLEASE RETAIN A COPY
OF RTCA CANISTER NUMBER(S)
FOR YOUR RECORDS**

Rev. 9/07

FILL IN OVAL COMPLETELY LIKE THIS . . .

Use pencil or dark ink only - No red

START DATE											
MONTH											
1	2	3	4	5	6	7	8	9	10	11	12
DAY											
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31					
YEAR											
06	07	08	09	10	11	12					

START TIME										
HOUR										
1	2	3	4	5	6	7	8	9	10	
NOON					MIDNIGHT					
11										
MINUTES										
15	30	45	AM							PM

STOP DATE											
MONTH											
1	2	3	4	5	6	7	8	9	10	11	12
DAY											
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31					
YEAR											
06	07	08	09	10	11	12					

STOP TIME										
HOUR										
1	2	3	4	5	6	7	8	9	10	
NOON					MIDNIGHT					
11										
MINUTES										
15	30	45	AM							PM

TIME ZONE		
EST	CST	
MOUNTAIN	PACIFIC	ALASKA

TEST LOCATION TEMPERATURE ZONE				
40-50	51-60	61-70	71-80	81-90

L O C A T I O N	CRAWL SPACE	
	BASEMENT	
	FIRST FLOOR	
SECOND FLOOR		
THIRD FLOOR		
OTHER		

WAS CANISTER PLACED ACCORDING TO INSTRUCTIONS?	
YES	NO

WERE DETECTORS PLACED SIDE BY SIDE?	
YES	NO

AFFIX BAR CODE LABEL

**PLEASE RETAIN A COPY OF
RTCA CANISTER NUMBER
FOR YOUR RECORDS**

**AFFIX BAR CODE LABEL
FOR SIDE-BY-SIDE
MEASUREMENT ONLY**

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INSTRUCTIONS

The Home Radon Tester is harmless and easy to use. If you follow the instructions, this test will tell you whether or not you have a Radon Gas problem in your home at the time the test is run.

TO BEGIN TEST

1. Please print your name, address, telephone no., and test location on back of test information card.
2. Using a pencil, fill in the information on card: date, start time (check AM or PM), time zone, average indoor temperature, and floor level in which canister is being placed. See Figure 1
3. Remove R.T.C.A. Canister label. Place canister in selected location.
4. Do not remove tape that holds the top and bottom of can.
5. Do not take can apart.
6. Expose the canister in your home for 2 to 7 days. ANY exposure within this period will give you an accurate radon level.

TO END TEST:

1. After 2 to 7 days, seal canister top with label which reads "Use This Label To Seal Perforated Side Of Canister". Remove paper backing before applying label to canister top.
2. Fill in date and time test was stopped on the test card (check AM or PM).
3. Remove the lowest portion of the bar code label from the bottom of the canister and keep for your records. Then take the second bar code label and remove the paper backing from this bar code label and affix to the information card in the space provided.
4. Put the canister and test information card back into box and mail to R.T.C.A.
5. For the most accurate results, mail the canister to: RTCA, AS SOON AS POSSIBLE. The canister must be received by RTCA within 10 days of stopping the test.

Figure 1



For Best Results Follow These EPA Protocols:

If you are conducting a radon test for a real estate transaction, the EPA recommends these short-term options.

Take two short-term tests at the same time in the same location for at least 48 Hours.

OR

Take an initial short-term test for at least 48 hours. After the first test has been completed, take a follow-up short term test for at least 48 hours.

- If you are conducting a radon test that is **not** for a real estate transaction, Place canisters at least 20 inches above the floor on an exposed surface: i.e. a table, box, or the RTCA PROFESSIONAL TEST STAND.
- Place one canister in the lowest level of the home (i.e. basement). Place the second canister on the next higher level in a living area. Additional canisters should be placed in accordance with your individual testing strategy.
- Windows and doors should be kept closed as much as possible 12 hours before starting test and throughout the test period. Do not operate high volume attic and window fans during the test.
- Do not place canisters in drafts from ventilators, doors, windows, fireplaces, heating or air conditioner vents. Do not place canisters directly next to exterior house walls. Do not place on heat producing objects such as furnaces or televisions.
- Do not place canisters in a "still air" section of the room (such as inside drawers or cabinets). This will block the canisters from the normal air supply in the room.

CONDITIONS GOVERNING CONTRACT PERFORMANCE AND LIMITATION OF LIABILITY

CONTRACT PERFORMANCE: Seller shall not be responsible for nonperformance or delays in performance occasioned by any causes beyond Seller's reasonable control, including, but not limited to, labor difficulties, delays of vendors or carriers, fires, governmental actions and material shortages. Any delays occasioned shall effect a corresponding extension of Seller's performance dates which are, in any event, understood to be approximate. In no event shall Buyer be entitled to incidental or consequential damage for late performance or a failure to perform.

WARRANTY AND LIMITATION OF LIABILITY: Enviro Technology Corporation and RTCA does not accept any responsibility for financial or health consequences of subsequent actions taken by the client or its consultants as a result of any Radon Gas and/or associated progeny concentration measurement progeny concentration measurement program conducted by Enviro Technology Corporation and RTCA.

Seller warrants that any packaging or other services supplied by Seller and specifically purchased by Buyer shall be of a good quality and will be free from defects in material and workmanship. All claims for defective or non-conforming (both hereafter called defective) workmanship or materials under this warranty must be made in writing immediately upon discovery and, in any event within one (1) year after shipment. Defective items must be held for Seller's inspection and returned to the original F.O.B. point upon request. The foregoing is expressly in lieu of all other warranties whatsoever, express, implied and statutory including, without limitation, the implied warranties of merchantability and fitness.

2 HAYES STREET • ELMSFORD, NY 10523
RTCA
 CORPORATION
 OF AMERICA
 RADON TESTING
**RETURN TEST KIT &
 INFORMATION CARD TO:**

PLEASE TYPE OR PRINT.

SEND LAB REPORT TO:

NAME _____
 STREET _____
 CITY _____
 COUNTY _____
 STATE _____ ZIP CODE _____
 DAYTIME PHONE # () _____
 EMAIL _____

IF DIFFERENT FROM ABOVE,

PLEASE PROVIDE TEST LOCATION:

STREET _____
 CITY _____
 COUNTY _____
 STATE _____ ZIP CODE _____

PURPOSE OF TEST (Circle all that apply)

SCREENING POST-MITIGATION
 RESIDENTIAL REAL ESTATE
 SCHOOL COMMERCIAL/GOVT

AFFIX BAR CODE LABEL HERE

PLEASE RETAIN A COPY
 OF RTCA CANISTER NUMBER(S)
 FOR YOUR RECORD(S)

Rev. 9/07

TEST INFORMATION

FILL IN BOX COMPLETELY WITH PENCIL OR DARK INK
 (NO RED)

TEST START DATE

MONTH: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

DAY: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24

☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31

YEAR: '06 '07 '08 '09 '10 '11 '12

START TIME:
 HOUR: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ NOON ☐ MIDNIGHT

MINUTES: ☐ 15 ☐ 30 ☐ 45 AM ☐ PM

TEST STOP DATE

MONTH: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

DAY: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24

☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31

YEAR: '06 '07 '08 '09 '10 '11 '12

STOP TIME:
 HOUR: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ NOON ☐ MIDNIGHT

MINUTES: ☐ 15 ☐ 30 ☐ 45 AM ☐ PM

TIME ZONE:

☐ EST ☐ CST ☐

☐ MOUNTAIN ☐ PACIFIC ☐ ALASKA ☐

TEST LOCATION TEMPERATURE ZONE:

☐ 40-50 ☐ 50-60 ☐ 60-70 ☐ 70-80 ☐ 80-90 ☐

TEST LOCATION:

☐ CRAWL SPACE ☐

☐ BASEMENT ☐

☐ FIRST FLOOR ☐

☐ SECOND FLOOR ☐

☐ THIRD FLOOR ☐

☐ OTHER ☐

WAS DETECTOR PLACED ACCORDING TO INSTRUCTIONS?

☐ YES ☐ NO ☐

LP2362 Rev. 11/06

INSTRUCTIONS

The Home Radon Testing Device is harmless and easy to use. If you follow the instructions, this test will tell you whether or not you have a Radon Gas problem in your home at the time the test is run.

TO BEGIN TEST:

1. Please print your name, address, telephone #, and test location on test information card.
2. Using a #2 pencil, fill in the following information on test information card: date, start time (check AM or PM), time zone, average temperature and floor level on which detector is being placed. See Fig 1.
3. Remove the sealing cap from the detector and immediately replace it with the exposure cap (the cap with the 1/4" filtered hole in the center.) **HOLD THE DETECTOR UPRIGHT WHILE REPLACING THE CAP. SAVE THE SEALING CAP AND THE BROWN TAPE, BY PLACING THEM IN THE BROWN MAILING BAG. SAVE THE MAILING BAG.**
4. Expose opened detector in your home for 2 to 7 days. ANY exposure within this period will give you an accurate Radon level.

TO END TEST:

1. After 2 to 7 days, reseal the detector by removing the exposure cap (the cap with the 1/4" filtered hole in the top) and **IMMEDIATELY** replacing it with the sealing cap. **HOLD THE DETECTOR UPRIGHT WHILE REPLACING THE CAP TO AVOID SPILLING.**
2. Fill in date and time test was stopped on the Test information card (check AM or PM)
3. Put sealed detector, test information card, and exposure cap into mailing bag. Seal bag with brown tape.
4. For the most accurate results, mail the Detector to: RTCA, AS SOON AS POSSIBLE. The detector must be received by RTCA within 10 days of stopping the test.

Fig. 1



FOR BEST RESULTS FOLLOW THESE EPA PROTOCOLS:

- Place detectors 24" to 36" above the floor on an exposed surface: (i.e.-a Shelf or table.)
- Place one detector in the lowest livable level of home. Place the second detector on the next higher level in a living area. If additional detectors have been purchased, they should be placed on the next higher floor(s) in a living area.
- Exterior windows and doors should be kept closed 12 hours before starting test and throughout the entire test period. Do not operate high volume attic and window fans during the test.
- Do not place detectors in drafts from ventilators, doors, windows, fireplaces, heating or air conditioner vents. Do not place detectors directly next to exterior house walls.
- Do not place detectors near sources of high heat: (i.e. -furnaces, TV, etc.).
- Do not place detectors in a "still air" section of the room (such as inside drawers or cabinets). This will block the detectors from the normal air supply in the room.

CONDITIONS GOVERNING CONTRACT PERFORMANCE AND LIMITATION OF LIABILITY

CONTRACT PERFORMANCE: Seller shall not be responsible for nonperformance or delays in performance occasioned by any causes beyond Seller's reasonable control, including, but not limited to, labor difficulties, delays of vendors or carriers, fires, governmental actions and material shortages. Any delays occasioned shall effect a corresponding extension of Seller's performance dates which are, in any event, understood to be approximate. In no event shall Buyer be entitled to incidental or consequential damage for late performance or a failure to perform.

WARRANTY AND LIMITATION OF LIABILITY: Enviro Technology Corporation and RTCA does not accept any responsibility for financial or health consequences of subsequent actions taken by the client or its consultants as a result of any Radon Gas and/or associated progeny concentration measurement program conducted by Enviro Technology Corporation and RTCA.

Seller warrants that any packaging or other services supplied by Seller and specifically purchased by Buyer shall be of a good quality and will be free from defects in material and workmanship. All claims for defective or non-conforming (both hereafter called defective) workmanship or materials under this warranty must be made in writing immediately upon discovery and, in any event within one (1) year after shipment. Defective items must be held for Seller's inspection and returned to the original F.O.B. point upon request. The foregoing is expressly in lieu of all other warranties whatsoever, express, implied and statutory including, without limitation, the implied warranties of merchantability and fitness.

Liquid Scintillation Vial - Radon in Air

TEST INFORMATION
FILL IN BOX COMPLETELY WITH PENCIL OR DARK INK
(NO RED)

TEST START DATE

MONTH: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

DAY: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24

☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31

YEAR: '06 ☐ '07 ☐ '08 ☐ '09 ☐ '10 ☐ '11 ☐ '12

START TIME:
HOUR: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ NOON ☐ MIDNIGHT

MINUTES: ☐ 15 ☐ 30 ☐ 45 AM ☐ PM

TEST STOP DATE

MONTH: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

DAY: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24

☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31

YEAR: '06 ☐ '07 ☐ '08 ☐ '09 ☐ '10 ☐ '11 ☐ '12

STOP TIME:
HOUR: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ NOON ☐ MIDNIGHT

MINUTES: ☐ 15 ☐ 30 ☐ 45 AM ☐ PM

TIME ZONE:

EST ☐ CST ☐
MOUNTAIN ☐ PACIFIC ☐ ALASKA ☐

TEST LOCATION TEMPERATURE ZONE:

40-50 ☐ 50-60 ☐ 60-70 ☐ 70-80 ☐ 80-90 ☐

TEST LOCATION:

CRAWL SPACE ☐
BASEMENT ☐
FIRST FLOOR ☐
SECOND FLOOR ☐
THIRD FLOOR ☐
OTHER ☐

WAS DETECTOR PLACED ACCORDING TO INSTRUCTIONS?

YES ☐ NO ☐

LP2362 Rev. 11/06

2 HAYES STREET • ELMSFORD, NY 10523

RTCA
RADON TESTING
CORPORATION
OF AMERICA
**RETURN TEST KIT &
INFORMATION CARD TO:**

PLEASE TYPE OR PRINT.

SEND LAB REPORT TO:

NAME _____
STREET _____
CITY _____
COUNTY _____
STATE _____ ZIP CODE _____
DAYTIME PHONE # () _____
EMAIL _____

IF DIFFERENT FROM ABOVE,

PLEASE PROVIDE TEST LOCATION:

STREET _____
CITY _____
COUNTY _____
STATE _____ ZIP CODE _____

PURPOSE OF TEST (Circle all that apply)

SCREENING ☐ POST-MITIGATION ☐
RESIDENTIAL ☐ REAL ESTATE ☐
SCHOOL ☐ COMMERCIAL/GOVT ☐

AFFIX BAR CODE LABEL HERE

**PLEASE RETAIN A COPY
OF RTCA CANISTER NUMBER(S)
FOR YOUR RECORD(S)**

Rev. 9/07

RTCA --Radon in Water Test Kit

Instructions:

1. Choose an indoor water faucet that is most commonly used.
2. If the water faucet has an aerator. **REMOVE IT NOW.**
3. Allow the cold water to run for at least 10 minutes.
4. After at least 10 minutes has elapsed, reduce the flowrate to a slow single Stream of water
5. Remove the cap from the sample vial and place the sample vial as close to the End of the water faucet as possible. Let the water overflow the sample vial for 1-2 minutes. **Fill the sample vial completely to the top with water**

IMPORTANT Do not let water drip into the sample vial.
Do not leave any air space in the sample vial.

6. Tightly cap the sample vial. Turn the sample vial upside down and make sure that No air has been trapped inside the sample vial.

IMPORTANT If any air bubbles are present, you must take another Sample by repeating steps 5 and 6. Dump out previous Sample before repeating step 5.

7. Turn cold water off.
8. **Completely** fill out the enclosed information card.
9. Return the sample vial and the completed information card to RTCA for analysis. Use the enclosed Business Reply Card for return postage. Moisten the enclosed strip of Brown tape and use it to seal the mailing carton.



**RADON TESTING
CORPORATION
OF AMERICA**

RADON TEST KIT FOR WATER

Send Lab Report To:

NAME _____
STREET _____
CITY _____ STATE _____
ZIP CODE _____
DAYTIME TELEPHONE NO. _____

Test Location:

CLIENT _____
STREET _____
CITY _____ STATE _____
ZIP CODE _____

DATE OF SAMPLE _____
SAMPLE STOP TIME _____ AM ☐ PM ☐
SAMPLE LOCATION _____

Liquid Scintillation - Radon in Water

RTCA's RaDome Electret Ion Chamber - Long-Term Radon Test Kit

RTCA®'s RaDome Electret Ion Detectors contain an electrostatically charged Teflon disk. The ions produced by the alpha decay of radon inside the detector strike the disk, reducing the surface voltage. The voltage reduction is measured in the laboratory and the radon concentration is then calculated.

Radon levels vary from day to day and from season to season. Long-term tests remain in the home for 90 days, up to one year and give a better estimate of the year-round average radon level. The U.S. Environmental Protection Agency recommends the test kit be placed in the **lowest lived-in level** of the home. It should be placed in a room that is used regularly, but not a kitchen or bathroom. States or other organizations may have differing recommendations. Pennsylvania for example, recommends testing in the lowest livable level. Contact your state agency if you have any questions regarding placement.

INSTRUCTIONS

This test kit contains two (2) RaDome electret ion detectors; one is labeled "RA-DOME" and the other is labeled "BLANK". The one that is labeled BLANK should remain sealed in the foil pouch. Both detectors should be placed side by side approximately 4" to 6" apart during the exposure period.

1. Cut open the protective foil bag labeled "RA-DOME" with scissors at the zip-lock end and remove the RaDome radon detector and test information card. This begins the monitoring period. Save the protective foil bag for the return shipment.
2. Place the RaDome radon detector upright on a table, bookcase or other flat surface away from possible drafts (windows, doors, heating/cooling vents). Place the detector at least 20" above the floor in an undisturbed location. Avoid placing the detector near any concrete or masonry walls. Place sealed bag labeled "BLANK" approximately 4" to 6" away from the RaDome.
3. Please print the name and test location address on the front of the test information card. This is how it will appear on the RTCA® Radon Report.
4. Fill in the information cells on the back of the card: START date and time (AM or PM), year, time zone, average indoor temperature, and the building level the detector was placed.
5. Leave the detectors undisturbed for a period of at least 3 months (90 days) up to 1 year.
Removing the tamper tape from the RaDome will VOID the test.
6. At the end of the monitoring period, record the STOP date and time (AM or PM) on the test information card. Place the RaDome radon detector and the test information card into the protective foil bag and close the zip-lock.
7. Place both detectors in a padded envelope or box and return for analysis to:
RTCA, 2 Hayes Street, Elmsford, NY 10523.

TEST INFORMATION
FILL IN BOX COMPLETELY WITH PENCIL OR DARK INK
(NO RED)

TEST START DATE

MONTH: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

DAY: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

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☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31

YEAR: '06 ☐ '07 ☐ '08 ☐ '09 ☐ '10 ☐ '11 ☐ '12

START TIME:
HOUR: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ NOON ☐ MIDNIGHT

MINUTES: ☐ 15 ☐ 30 ☐ 45 AM ☐ PM ☐

TEST STOP DATE

MONTH: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

DAY: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

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YEAR: '06 ☐ '07 ☐ '08 ☐ '09 ☐ '10 ☐ '11 ☐ '12

STOP TIME:
HOUR: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

☐ 11 ☐ NOON ☐ MIDNIGHT

MINUTES: ☐ 15 ☐ 30 ☐ 45 AM ☐ PM ☐

TIME ZONE:

EST ☐ CST ☐

MOUNTAIN ☐ PACIFIC ☐ ALASKA ☐

TEST LOCATION TEMPERATURE ZONE:

40-50 ☐ 50-60 ☐ 60-70 ☐ 70-80 ☐ 80-90 ☐

TEST LOCATION:

CRAWL SPACE ☐

BASEMENT ☐

FIRST FLOOR ☐

SECOND FLOOR ☐

THIRD FLOOR ☐

OTHER ☐

WAS DETECTOR PLACED ACCORDING TO INSTRUCTIONS?

YES ☐ NO ☐

LP2362 Rev. 11/06

2 HAYES STREET • ELMSFORD, NY 10523

RTCA
RADON TESTING
CORPORATION
OF AMERICA
**RETURN TEST KIT &
INFORMATION CARD TO:**

PLEASE TYPE OR PRINT.

SEND LAB REPORT TO:

NAME _____

STREET _____

CITY _____

COUNTY _____

STATE _____ ZIP CODE _____

DAYTIME PHONE # () _____

EMAIL _____

IF DIFFERENT FROM ABOVE,

PLEASE PROVIDE TEST LOCATION:

STREET _____

CITY _____

COUNTY _____

STATE _____ ZIP CODE _____

PURPOSE OF TEST (Circle all that apply)

SCREENING ☐ POST-MITIGATION ☐

RESIDENTIAL ☐ REAL ESTATE ☐

SCHOOL ☐ COMMERCIAL/GOVT ☐

AFFIX BAR CODE LABEL HERE

**PLEASE RETAIN A COPY
OF RTCA CANISTER NUMBER(S)
FOR YOUR RECORD(S)**

Rev. 9/07

Appendix C: Quality Policy Statement for RTCA Employees

It is the Company's objective to produce technically defensible laboratory test results that accurately and precisely measure the radon concentration in air and water samples. The Company is committed to reaching and routinely performing laboratory work in conformance to the NELAC standards, resulting in the overall improvement in laboratory quality over time. Demonstration of the Company's commitment to reach its objective will result in the following:

- *Adequately staffed and equipped laboratory facility
- *Successful participation in the proficiency testing program operated by the New York State Environmental Laboratory Approval Program
- *Successful implementation of a NELAC compliant quality system
- *Annual internal audits with management review
- *Successful biennial assessments by the New York State Environmental Laboratory Approval Program
- *Timely reporting of laboratory results to customers
- *Laboratory test results that are supported by quality control data and documented laboratory test procedures

It is understood that this commitment to quality is implemented and maintained by employees at all levels. Management will document the commitment to quality through the employee evaluation process, the training procedure, the internal audit process, and the document control process.

I agree to abide by the above "Quality Policy" for personnel employed by RTCA. I understand that employment does not constitute any form of license. Additionally, I release and forever discharge RTCA and RTCA subcontractors from any and all liabilities, claims, demands, or causes of action whatsoever, which now exist or which may hereafter arise on account of my (the undersigns) activities henceforth as an employee of RTCA. The undersigned applicant further acknowledges that this release is being given as a prerequisite for having filed application for employment by RTCA.

Signature	Print Name	Date
-----------	------------	------

Attachment D

Demonstration of Capability Certification Statement

Date:

Laboratory Name:

Laboratory Address:

Analyst(s) Name(s):

Matrix: [Radon In Air]
 [Radon In Water]

[Method number, SOP#, Rev#, analyte]

We, the undersigned, CERTIFY that:

1. The analysts identified above, using the cited test method(s), which is in use at this facility for the analyses of samples under the National Environmental Laboratory Accreditation Program, have met the Demonstration of Capability.
2. The test method(s) was performed by the analyst(s) identified on this certification.
3. A copy of the test method(s) and the laboratory-specific SOPs are available for all personnel on-site.
4. The data associated with the demonstration capability are true, accurate, complete and self-explanatory (1).
5. All raw data (including a copy of this certification form) necessary to reconstruct and validate these analyses have been retained at the facility, and that the associated information is well organized and available for review by authorized assessors.

Technical Director's
Name & Title

Signature

Date

Quality Assurance
Officer's Name

Signature

Date

Attachment E

Code of Ethics for RTCA Employees

3.0 PURPOSE

The following Code of Ethics serves as an agreement with Radon Testing Corporation of America (“RTCA”) employees who are currently employed by RTCA. The established rules are necessary to protect the life, health, property and welfare of the public, and to maintain the credibility of the RTCA operation. Accordingly, each RTCA employee agrees to retain full responsibility and liability for his/her actions and agree to comply with the following Code of Ethics:

3.0 CODE OF ETHICS

Responsibility:

Protect the safety, health and welfare of the public, by performing all certified activities in accordance with properly established and approved procedures.

Integrity:

Perform all certified activities honestly and treat the public, clients and employer in an impartial and ethical manner. All details of the certified activity shall faithfully and accurately reflect the inspections; procedures used, and result obtained.

Conflict of Interest:

Consciously avoid conflicts of interest situations and openly disclose such conflicts to all concerned parties.

Improper Conduct:

Refrain from work activities outside the area of certification without prior approval.

Safety:

Act in a safe and responsible manner while conducting certified activities, ensuring that all required and necessary safety procedures are in place and are being used by one’s self and others for whom one is responsible.

3.0 PENALTY

Violation of this Code of Ethics by any RTCA Employee might be cause for discontinuing employment.

I agree to abide by the above “Code of Ethics” for personnel employed by RTCA. I understand that employment does not constitute any form of license. Additionally, I release and forever discharge RTCA and RTCA subcontractors from any and all liabilities, claims, demands, or causes of action whatsoever, which now exist or which may hereafter arise on account of my (the undersigns) activities henceforth as an employee of RTCA. The undersigned applicant further acknowledges that this release is being given as a prerequisite for having filed application for employment by RTCA.

Signature

Print Name

Date

Appendix E – Code of Ethics

1. Conflict of interest. No employee should have any interest, financial or otherwise, direct or indirect, or engage in any business or transaction or professional activity or incur any obligation of any nature, which is in substantial conflict with the proper discharge of his/her duties in the public interest.
2. No employee should accept other employment which will impair his independence of judgment in the exercise of his/her official duties.
3. No employee should accept employment or engage in any business or professional activity which will require him to disclose confidential information which he has gained by reason of his official position or authority.
4. No employee should disclose confidential information acquired by him in the course of his/her official duties nor use such information to further his/her personal interests.
5. No employee should use or attempt to use his/her official position to secure unwarranted privileges or exemptions for himself/herself or others.
6. No employee should engage in any transaction as representative or agent of the government with any business entity in which he has a direct or indirect financial interest that might reasonably tend to conflict with the proper discharges of his/her official duties.
7. An employee should not by his/her conduct give reasonable basis for the impression that any person can improperly influence him or unduly enjoy his/her favor in the performance of his official duties, or that he/she is affected by kinship, rank, position or influence of any party or person.
8. An employee should abstain from making personal investments in enterprises which he/she has reason to believe may be directly involved in decisions to be made by him/her or which will otherwise create substantial conflict between his/her duty in the public interest and his/her private interest.
9. An employee should endeavor to pursue a course of conduct which will not raise suspicion among the public that he/she is likely to be engaged in acts that are in violation of his trust.
10. No employee employed on a full time basis nor any firm or association of which such an employee is a member nor corporation a substantial portion of the stock of which is owned or controlled directly or indirectly by such an employee, should sell goods or services to any person, firm, corporation or association which is licensed or whose rates are fixed by the agency in which such an employee serves.
11. If any employee shall have a financial interest, direct or indirect, having a value of ten thousand dollars or more in any activity which he is subject to the jurisdiction of a regulatory agency, he/she should file a written statement that he/she has such a financial interest in such activity which statement shall be open to public inspection.
12. Violations – In addition to any penalty contained in any other provision of law any such employee who shall knowingly and intentionally violate any of the provisions of the Code of Ethics may be fined, suspended or removed from office or employment in the manner provided by law.

Attachment E

The following laboratory staff have read this Code of Ethics. I certify that the requirements have been communicated to me and that I am trained in its use. A copy of this page will be distributed to the employee training record file. I will not engage in any activities that could possibly negatively impact the integrity of data produced in this organization.

_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date
_____ Signature	_____ Name	_____ Date

Attachment F

Complaint/Corrective/Preventive Action Log

Open Date: _____ Initiated By: _____

BASIS: DESCRIPTION: METHOD: _____

- ☐ Audit
- ☐ Complaint
- ☐ PT failure
- ☐ QC failure
- ☐ SOP departure
- ☐ Prevention

Data:

☐ Type _____
☐ Samples _____

Recorded By: _____ Date: _____

ROOT CAUSE:/PUROPOSE:

Investigated By: _____ Date: _____

POTENTIAL CORRECTIVE/ PREVENTIVE ACTIONS:

Recommended By: _____ Date: _____

ACTIONS PERORMED:

Disposition of Data:

☐ Reanalyzed
☐ Rejected
☐ Qualified
☐ Recalled Performed by: _____ Date: _____

FOLLOW-UP ACTIVIES:

☐ Continue another corrective action
☐ Change to SOP# Assessed by: _____ Date: _____
