New Jersey Department of Environmental Protection
Division of Environmental Safety and Health
Bureau of Environmental Radiation
Radon Section
Mail Code 25-01
PO Box 420
Trenton, New Jersey 08625-0420
Phone: (609) 984-5425
Fax: (609) 984-5595

QA/QC Plan Review Checklist

Submit this checklist with Measurement Business application.

Business Name: _____ Certification #: _____

The Plan follows the exact order in the table below for each device. YES ___ NO ___

If you answered NO, write the correct page numbers in the table below ONLY for those sections that vary from the order listed.

Measurement Specialist Signature: _____ Date: _____

	CC	CRM	ES	AT	LS
A. Title Page					
1. Title of Document (including device name)					
2. Business Name					
3. Business Physical Address					
4. Month and Year of Preparation					
5. Printed name of responsible Specialist (QA Officer)					
6. Signature of the responsible Specialist					
B. Table of Contents					
Revision numbers listed and dated					
C. Description of Business Organization					
1. Chart or listing indicating line of authority					
2. Names of all others involved in the process of analysis or data assessment (identify if certified)					
D. Measurement Device Type					
1. Detailed description of device (Physical appearance)					
2. How it works to give a radon result					
E. Deployment Procedure					
1. Reference to EPA protocol document(s) listed on application					
2. Initial set-up (how opened, powered up, unscrewed)					
3. Guidelines for detector location and closed house conditions					
4. Undesirable placement locations (kitchens, bathrooms, closets, near gas appliances,					

crawlspaces, basements considered to be not livable, near windows, doors, fans, a/c units excessive heat or humidity, on the floor)					
E. Deployment Procedure con't	**CC**	**CRM**	**ES**	**AT**	**LS**
5. Environmental conditions affecting tests (Heavy rain, snow cover, high winds, rapid barometric pressure differences)					
6. Typical testing period of time (hours, days, months, etc)					
7. Copies of instructions that are mailed to clients (must contain all monthly reporting required fields)					
8. Retrieval procedures					
9. Procedure developed by the business that ensures technicians understand and follow procedures (signed by techs)					
F. Internal Quality Control Checks					
1. Deployment procedures for Duplicates and Blanks; indicate how your business will report duplicate test results on client report. Do you provide both results or say "average result of two QA tests?"					
2. Relative Percent Difference (RDP) must be discussed using the following equation: RDP = [(A-B) / (A + B)/2)] X 100, where A = higher test result • Both radon levels are greater than 4.0 pCi/L = < 36% • Both radon results are less than 4.0 pCi/L = < 67% • One radon result is greater and one is less than 4.0 pCi/L = the higher result must be less than two times the lower result. 3. An RDP difference beyond these limits must be deemed invalid and the homeowner must be notified to discuss the invalid results and to offer that the duplicate testing be redone. If the follow-up testing has an RDP greater than the limit, corrective action must be taken. Discuss this review and specific procedure to be followed when criteria are not met.					
4. Device used for duplicate testing CRM may use CC as dup if there is no other CRM					
5. # of Duplicates required (10% or 50, whichever is less) Must be conducted systematically throughout all tests deployed. The specific procedure for					

ensuring sufficient duplicates must be documented for distribution to technicians, homeowners (if appropriate) and any other clients (schools, counties, etc) If your business conducts all or part of its testing through mail order, the business must document how this will be done systematically.					
	CC	**CRM**	**ES**	**AT**	**LS**
6. # of Blanks required (5% or 25, whichever is less)					
7. Background measurements performed when CRMs are calibrated (numerical values only)					
8. Reference cell usage discussed and certified when calibrations performed on reader. (at least 1/week at office or every time in field)					
9. Routine maintenance procedures (cleaning, replacement parts, battery checks)					
10. Spike testing routinely performed [(min 3/yr-max 6/month) passive devices only] Discuss the procedure set up with the facility.					
11. Data validation procedures must be included (Proofreading a % of all files to see that all information entered into the computer fields from chain of custody forms, any calculations that were electronically performed are hand-checked, etc.)					
12. Documentation of any errors found during validation checks, by whom, the date, and how resolved.					
13. Name(s) or position(s) of key individuals responsible for handling data, reporting results, and maintaining confidentiality					
14. Predetermined limits of data acceptability must be listed. (a range of upper and lower limits at which the result can be deemed valid for radon activity, ie between 0.5 pCi/L up to 100 pCi/L)					
15. Corrective Actions (CA) Describe in detail what is done if…					
• radon results are outside of the predetermined limits					
• problems were found during internal audit					
• deviations from routine circumstances are found					
16. Names of those responsible for initiating and approving CA					
17. Procedure for CA to be taken and documented; provide timeframe for CA to be initiated and take effect - Should be documented in QA Report					
18. Procedure for investigation into anomalous (abnormal) data					
19. Calibration Procedures used by the business					

20. List device(s) to be calibrated					
	CC	**CRM**	**ES**	**AT**	**LS**
21. Frequency of calibration (1/year for all devices) stated. Calibration certificates must be submitted with renewal application.					
22. Name of calibration facility used					
23. Dated log (list) of reference cell usage Provide a copy (page) of the log, indicating Specialist quarterly oversight					
G. Chain of Custody Procedures					
1. Description of procedures to be followed, including that the form must be filled out completely					
2. Names and duties of those that receive incoming field samples and verify the entry of information into custody records.					
3. The following must be included:					
a. A copy of forms used filled out completely for each device type and model used.					
b. Copy of the Confidentiality Waiver which, if used, must be signed by the HOMEOWNER ONLY, allowing test results to be given to others, usually in a real estate transaction					
c. A copy of a filled out mail order info card (if applicable) for each device type and model used.					
d. Detector custody documented in Log format – Unused (new) and used devices (from homeowners and businesses)					
4. Required data tracking information					
a. Test Location					
1. Homeowner Name					
2. Address					
3. City/Town, State					
4. Zip code of test location					
5. Incorporated municipality of test location					
6. County of test location					
b. Client Information (if different from test location)					
1. Client Name					
2. Address					
3. City/Town, State					
4. Zip code					
c. Device model number (Portable only)					
d. Sample reference number or device serial #					
e. Device type (if use more than 1 type)					
f. Floor/Location					
g. Closed house conditions must be maintained					
h. Building Type (list all types approved to test)					

1. Residential					
2. Public School					
	CC	**CRM**	**ES**	**AT**	**LS**
3. Child Care					
4. Non-residential					
5. Child care in a public school					
i. Structure Type					
1. Basement					
2. Crawlspace					
3. Slab on grade					
4. Various other possibilities (see monthly report)					
j. Test Type					
1. Standard					
2. Duplicate					
3. Blank					
k. Real Estate Transaction: Yes No (circle one)					
l. Post Mitigation test: Yes No (circle one)					
m. Deployed by					
1. Certification number					
2. Date					
3. Time					
n. Retrieved by					
1. Certification number					
2. Date					
3. Time					

H. QA reports submitted to Management					
1. Business must identify all individuals responsible for reporting to Management					
2. There must be a description of the form and contents of the anticipated reports					
3. Discuss in detail periodic assessment of duplicates, blanks, background checks, reference cell use					
4. Annual proficiency results from an approved facility					
6. Results of internal or external audits (high background checks on a % of incoming new and used canisters, package integrity)					
7. All significant QA/QC problems encountered and recommended solutions (referenced in CA Section)					

	CC	CRM	ES	AT	LS
I. School Testing Checklist					
1. Deployment procedures are discussed, particularly what rooms to test and when testing will be conducted. EPA 402-R-92-014, "Radon Measurement in Schools" as guidance document					
2. Include 10% duplicates or 50 (whichever is smaller) and 5% blanks or 25 (whichever is smaller), per school (independent of other testing done). Describe specific procedures to ensure that blanks and duplicates are conducted for each school.					
3. Discuss that the room number or name will be listed on the:					
a. monthly report					
b. chain of custody form					
4. Discuss that a record of device placement will be maintained at the business and be made available during any inspections					
5. Describe any of the following steps to ensure proper testing conditions are met:					
a. meet with principal or administrators					
b. request that principal meet with teachers and staff to discuss testing					
c. the document "Fact Sheet for School Staff" is distributed to teachers and staff					
d. post signs in testing locations ("Radon Testing in Progress")					
e. take additional steps					
6. Discuss how deviations from closed building conditions will be handled					
7. Discuss how and when results that are 4 pCi/L or higher will be reported to the DEP					