Lead-Based Paint Inspection Report

Old Detectives Building
Wadesboro, NC

Prepared for:

Alex Sewell
City of Wadesboro
Wadesboro, NC

October 3, 2016

Prepared by:

Get The Lead Out, LLC
3717 Latrobe Drive, Suite 760
Charlotte, North Carolina 28211
704-376-3594

CERTIFICATION AND REVIEW PAGE

Lead-Based Paint Inspection of
The Old Detectives Building in Wadesboro, NC

I hereby certify that the Inspections described herein were completed under my direct personal charge. Get The Lead Out, LLC cannot warrant that the inspected property does not contain lead in locations other than those inspected and identified in this report. This Inspection is based solely on the spaces accessed.

Peter M. Hubicki
Get The Lead Out, LLC
NC Risk Assessor #120001

Date: October 3, 2016

DISCLAIMER AND DISCLOSURE STATEMENTS

Disclaimer

This report summarizes Get the Lead Out's evaluation of the subject property for the presence of lead-based paint. Our findings are based upon our observations at the property and sampling performed at the time of the Inspection activities; conditions at the property may change due to deterioration or maintenance, and Get the Lead Out is not responsible for such changes. Additional lead-based paints may exist in other portions of the property, but were undetected due to inaccessibility or due to an imperceptible change in paints. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation. The observations, results and conclusions contained in this report are time dependent and are subject to changing site conditions and revisions to federal, state and local regulations. Ongoing monitoring by the owner is usually necessary. Except for our evaluation of the subject property for the presence of lead-based paint, no other environmental concerns were addressed during this Inspection.

Reliance or use of the information or conclusions of this report by a third party (i.e. a party other than the one for whom it was prepared) without explicit authorization shall be at the third party's sole risk. Get the Lead Out makes no warranties or representations, express or implied in this report, to any such third parties.

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1.0 EXECUTIVE SUMMARY

Get The Lead Out, LLC was retained by the City of Wadesboro to perform a lead-based paint inspection at the Old Detectives Building in Wadesboro, NC. This inspection was to determine whether or not lead-based paint was present on any of the painted surfaces before renovation.

Kathryn Hubicki, a North Carolina licensed risk assessor, conducted the actual fieldwork. The credentials of the risk assessor and of our firm are in Appendix C. She tested all accessible interior and exterior painted components. Additionally, all Federal, State and City Regulations governing the Inspection of lead based paint for the site of the Inspection were followed.

Get The Lead Out has determined that there was no lead-based paint identified during the inspection of the property.

Only one area was found to have an elevated level of lead of 0.11; this was on the exterior foundation on side C which is painted green.

Components which were inaccessible, missing or not tested are listed in Section 2. All paint-covered components which were inaccessible must be assumed to be positive for lead-based paint. For this building, no inaccessible components were noted.

Under 29CFR 1926.62, OSHA requires worker protection from all levels of lead. This report presents the areas tested and the levels of lead found.

2.0 PROPERTY DESCRIPTION

The Old Detectives Building in Wadesboro, NC was constructed prior to 1978.

The exterior is constructed of wood with wood trim. Doors are wood with wood trim. The windows are plexiglass.

Interior walls are drywall in room 1 and factory finished wood paneling in rooms 2 and 3. All rooms have sheetrock ceilings. Floors are vinyl or carpet.

Building – Side A

Building – Side B

Building - Side C

Building – Side D

3.0 LEAD INSPECTION

This inspection was to determine whether or not lead-based paint was present on any of the painted surfaces prior to renovation.

Testing was performed by Kathryn Hubicki, a North Carolina licensed lead risk assessor, using a Niton XLp Model 300 Series Lead Analyzer, serial #8876. The inspector's license is provided in Appendix C: Inspector Credentials. The XRF analyzer is designed to measure the lead content of surface coatings on a variety of building surfaces, substrates, and components. The measurement is rapid and nondestructive and, according to the manufacturer, is capable of detecting lead concentrations that occur within numerous layers of various surface coatings. No inconclusive test results are found using this instrument.

All testing was non-destructive.

4.0 X-RAY FLUORESCENCE LEAD PAINT TEST RESULTS

A sampling strategy was developed to provide representative samples in accordance with OSHA and EPA regulations. In addition to the table listing all XRF test results, we have provided a table with all XRF test results greater than 0.10 mg/cm^2.

Get The Lead Out has determined that there was no lead-based paint identified during the inspection of the property.

Only one area was found to have an elevated level of lead of 0.11; this was on the exterior foundation on side C which is painted green.

Please refer to the Appendix A: All XRF Test Results for the detailed analytical testing results for each distinct area inspected. The report provides complete testing data for each location tested.

A drawing of the building, to aid in locating testing locations, is in Appendix B.

Components which were inaccessible, missing or not tested are listed in Section 2. All paint-covered components which were inaccessible must be assumed to be positive for lead-based paint. For this building, no inaccessible components were noted.

Some of the remaining XRF test locations exhibited lead-in-paint levels below the level that EPA identifies as positive for the presence of lead-based paint, namely 1.0 mg/cm^2.

Such surfaces could create dust-lead or soil-lead hazards if the paint is turned into dust by abrasion, scraping, or sanding. Should these or any lead containing components or surfaces be disturbed in any manner that generates dust, care should be taken to limit its spread.

5.0 X-RAY FLUORESCENCE TESTING PROCEDURE

The Niton XLp is a hand-held, portable lead detector, designed to make fast, accurate non-destructive measurements of lead concentration in lead-based paint. The XLp displays lead levels, indicates precision of measurement and stores up to 3000 readings and spectra.

The accuracy and precision of the data is a function not only of the instrument, but also of how well the operator is trained. Get the Lead Out, LLC has developed a standardized test procedure to be followed by technicians as they make measurements.

Procedure for XLp

1. Turn on the XLp. Self-calibration will occur automatically when the machine is turned on.
2. When the XLp emits a tone and returns to the main menu, self-calibration is complete.
3. Check the calibration of the instrument by using a paint film, which is nearest to 1.0 mg/cm2 in the NIST Standard Reference Material used.
4. Repeat three times.
5. Begin the test by selecting from the touch screen menus the structure type, location and composition for the surface to be tested.
6. Place the XLp firmly on the painted surface, pull the shutter release trigger, and keep the XLp pressed flat against the surface.
7. The XLp's flashing lights will decide when the test has reached the desired level of accuracy. For readings of approximately 1.0 mg/cm², a 15 source second reading is advisable. For lead-free areas or high lead areas, a reading of 2-4 source seconds is needed.
8. Lift the XLp from the surface to end the test.
9. To take additional readings, simply repeat steps 5 through 8.
10. At the conclusion of the testing at the site, three additional calibration checks are made. Or, alternatively, calibration checks are made every four hours during continuous testing.

The first step is to conduct an inventory of the painted components in interior rooms, of the exterior walls and surfaces, and of the other exterior areas such as play areas and garages. An area is chosen at the sample location for paint testing. A diagram is made of the exterior of the building, the floor plan and the individual rooms. Each area is numbered so that sample identification is consistent and the location of each sample taken can be found on the diagram.

Perimeter walls are identified as A, B, C and D. Each room equivalent was orientated so that the wall that the "A Wall" corresponds directly with the main entrance wall. Each room equivalent's side identification follows the scheme for the whole housing unit. A

site sketch designating rooms by expected use (kitchen, bathroom, etc) and walls by orientation (A through D) is located in Section 2.3.

Before beginning XRF testing, sample readings are taken as described above. If the reading is not within the accuracy of the range of deviation, the instrument is out of control. For example, if the reading of the 1.0 mg/cm² standard is shown to be 0.9 ± 0.2 mg/cm², it is within the range of standard deviation. If the instrument is out of control, it must be sent back to Niton before any further testing can occur. The shipping, handling and transportation manual must be consulted for instructions.

To minimize the potential adverse effects of frequent substrate changes on the Niton instrument, every effort is made to test the substrates within each room in order. All painted wood, for example, could be tested first, then plaster, drywall, concrete, brick and metal.

The Niton is retested for accuracy each day or after it has been turned off for breaks or lunch. If continuous testing occurs for more than four hours, the instrument should be rechecked.

After completing the specific project or at the end of the day, all data is downloaded into a computer using the XLp proprietary software. Then a copy is created for additional safety.

This test procedure was developed using the HUD 1997 procedure for XRF testing instruments.

5.1 TEST EQUIPMENT

The field measurements were taken with a Niton XLp. This is a handheld XRF instrument with sophisticated integrated software that allows the specific identification of sample structure type and location. Containing a Cadmium-109 radioactive isotope as a power source, the XLp has been proven during HUD and Air Force studies to give accurate measurements of the presence and amount of lead-based paint.

Both false positive results and false negative results are minimized when using this equipment. Copies of North Carolina License and Operator Certificates are located at the end of this report in Appendix D.

5.2 EXPLANATION OF SAMPLE NUMBERING

Referring to the pages of sample data in Appendix A, one can see that the Niton XLp Spectrum Analyzer consecutively numbers the samples.

The results are presented in ascending numerical order, just as they were taken. One can see from the Time column the sequential nature of these values.

The following chart is an explanation of the columns present in the XRF results.

Heading	Explanation
Reading No.	Test number in this file.
Date & Time	Date of test and the time of the test
Room	Type of room, i.e., kitchen, bath, etc., with an identifying room number
Side	The side of the room, building or area is assigned a letter (A, B, C or D) for later identification.
Component	Wall, door, window, etc.
Feature	Further delineation of the part of the structure tested.
Condition	Condition of paint, intact, poor, etc.
Substrate	Type of substrate, plaster, wood, metal, concrete, etc.
PbC	Concentration of lead-based paint found, measured in mg/cm^2

5.3 QUALITY CONTROL

Assurance of accurate and proper field measurements taken with the Niton XLp is accomplished in four ways.

a. The accuracy and precision of the calibration of the instrument is verified routinely. A new calibration is performed every time the instrument is turned on. These "checks" must be within specification in order for the instrument to permit measurements to be taken. In addition, the calibration check is run when the testing is complete, or every four hours.

b. The actual spectrum of energies detected during an analysis is recorded, evaluated and saved in memory by the instrument. This spectrum is actually the fingerprint or X-ray print of each sample. The spectrum reveals numerous items of detail about the sample. Details about the information in each column of the printout are explained in Section 5.2. In addition, the graphs of the actual energy spectra are stored in the data field. This information can be further analyzed if necessary for legal means.

c. All samples are numbered, recorded, location and structural information is entered and checked against the floor plan drawings.

d. An encrypted, sequential list of each and every measurement is recorded and reported.

The combination of all four controls provides empirical, defensible proof that measurements were taken according to plan and indications of whether (or not) the instrument was performing properly.

6.0 RECOMMENDATIONS FOR REMODELING

The presence of lead in paint means that any contractor performing demolition and/or renovations is required to make provisions for worker protection by complying with North Carolina OSHA regulations, 29 CFR 1926.62 Construction Standard for Lead.

Regulated work activities that may generate airborne lead levels (and may require air testing) include torch burning, abrasive blasting, welding, sawing, and grinding. If any of these activities need to occur on lead-based painted surfaces during demolition or renovation, methods such as HEPA vacuums, wet-stripping, water spray or others should be considered to reduce the potential for lead-dust or fume emissions to surrounding areas and workers.

At the minimum, GTLO recommends that contract demolition workers be told of the presence of lead paint, be given access to Appendices A and B of the OSHA lead standard, and that a negative exposure assessment occur according to OSHA regulations 29 CFR 1926.62.

If lead-based paint remains adhered to the surface of demolition materials, those materials may be disposed of at a lined landfill permitted to accept such materials. Where lead-based paint becomes separated by demolition activities, such lead-based paint chips should be tested by Toxicity Characteristic Leaching Procedures (TCLP) to determine appropriate disposal options.

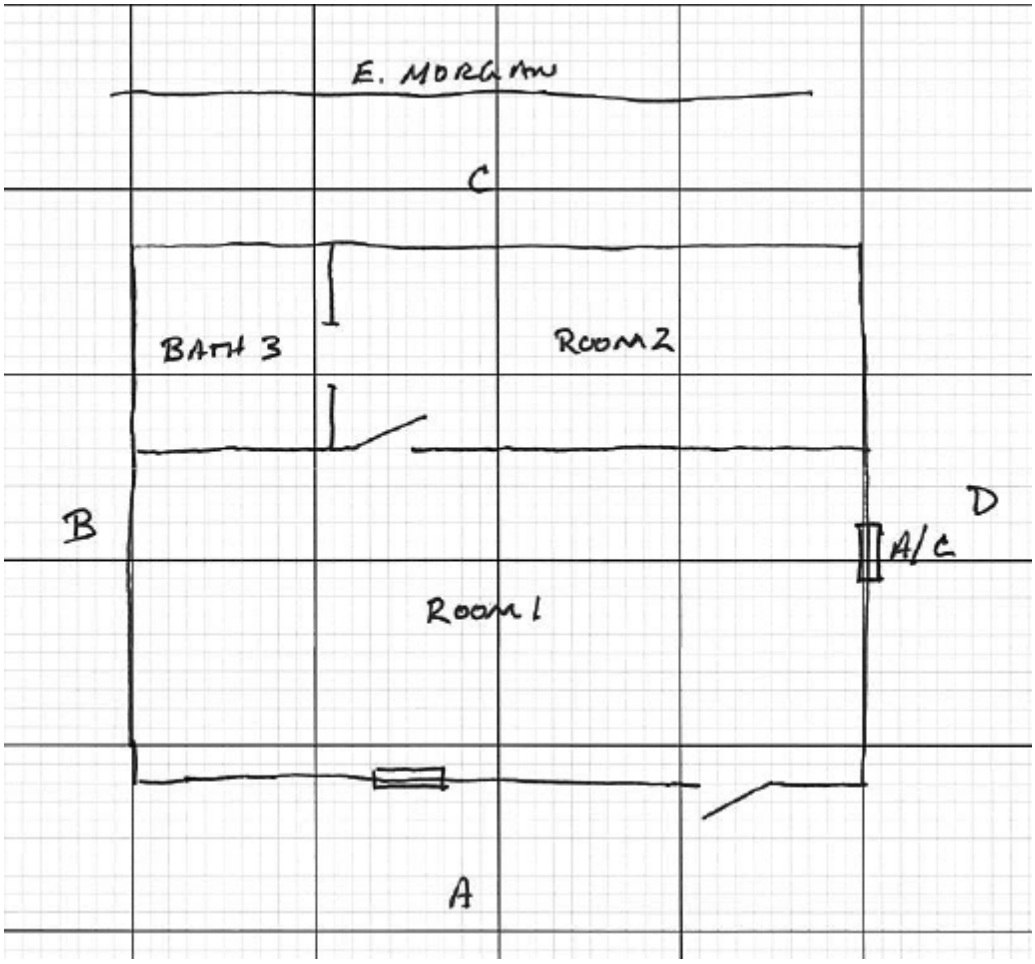
7.0 APPENDICES

APPENDIX A – ALL XRF TEST RESULTS

Old Detectives Building data
All XRF Readings

Reading No	Time	Rooms	Side	Component	Feature	Condition	Substrate	Color	PbC	Results
1	9/28/2016 11:09								2.48	
2	9/28/2016 11:11					Calibration			1.00	Positive
3	9/28/2016 11:12					Calibration			0.90	Negative
4	9/28/2016 11:13					Calibration			1.00	Positive
5	9/28/2016 11:16	Room 1	A	Wall, Int.		Intact	Wood	Beige	0.00	Negative
6	9/28/2016 11:16	Room 1	D	Wall, Int.		Deteriorated	Wood	Beige	0.00	Negative
7	9/28/2016 11:16	Room 1	C	Wall, Int.		Deteriorated	Wood	Beige	0.00	Negative
8	9/28/2016 11:16	Room 1	B	Wall, Int.		Deteriorated	Wood	Beige	0.00	Negative
9	9/28/2016 11:17	Room 1	A	Wall, Int.	Baseboard	Intact	Wood	Beige	0.00	Negative
10	9/28/2016 11:17	Room 1	A	Wall, Int.	Crn Molding	Intact	Wood	Beige	0.00	Negative
11	9/28/2016 11:17	Room 1	A	Ceiling		Intact	Drywall	Beige	0.00	Negative
12	9/28/2016 11:18	Room 1	A	Door, Int.	Jamb	Intact	Wood	Beige	0.00	Negative
13	9/28/2016 11:18	Room 2	A	Door, Int.	Jamb	Deteriorated	Wood	Beige	0.00	Negative
14	9/28/2016 11:19	Room 2	A	Ceiling		Intact	Drywall	Beige	0.00	Negative
15	9/28/2016 11:30	Bath 3	A	Ceiling		Deteriorated	Drywall	White	0.00	Negative
16	9/28/2016 11:47	Exterior	A	Door, Ext.	Door	Deteriorated	Wood	White	0.00	Negative
17	9/28/2016 11:47	Exterior	A	Siding, Ext.	Ceiling	Deteriorated	Wood	White	0.00	Negative
18	9/28/2016 11:47	Exterior	A	Siding, Ext.	Trim, Upper	Deteriorated	Wood	White	0.00	Negative
19	9/28/2016 11:47	Exterior	A	Siding, Ext.	Trim, Upper	Deteriorated	Wood	White	0.00	Negative
20	9/28/2016 11:48	Exterior	C	Siding, Ext.	Foundation	Deteriorated	Block	White	0.01	Negative
21	9/28/2016 11:48	Exterior	C	Siding, Ext.	Foundation	Deteriorated	Block	Green	0.11	Negative
22	9/28/2016 12:09					Calibration			0.90	Negative
23	9/28/2016 12:10					Calibration			0.90	Negative
24	9/28/2016 12:11					Calibration			0.90	Negative

APPENDIX B – DRAWINGS



APPENDIX C – INSPECTOR CREDENTIALS

North Carolina Department of Health and Human Services
Division of Public Health

Pat McCrory
Governor

Richard O. Brajer
Secretary

Daniel Staley
Division Director

March 10, 2016

Kathryn Hubicki
2121 Commonwealth Ave Ste 202
Charlotte, NC 28205

Dear Ms. Hubicki:

The Health Hazards Control Unit (HHCU) has determined that you have fulfilled the application requirements and are eligible for lead certification as a(n) RISK ASSESSOR. Your assigned Risk Assessor certification number is 120243, which is reflected on your enclosed North Carolina Lead Certification card. The State requires that all persons conducting regulated lead-based paint activities be certified and have their identification card on-site.

A "Lead-Based Paint Activity Summary" shall be submitted to the HHCU by the certified inspector or risk assessor within 45 days of each inspection, risk assessment, or lead hazard screen conducted. The information shall be submitted on a form provided or approved by the Program, per 10A NCAC 41C .0807(b), Lead-Based Paint Hazard Management Program Rules.

Accredited refresher training must be completed at least every 24 months from the date of the last accredited training course **AND** within twelve months prior to applying for certification. The HHCU strongly recommends that individuals note the date of certification expiration and ensure all refresher training meets the above requirements.

Your North Carolina Risk Assessor certification will expire on MARCH 31, 2017. It is NOT the policy of the HHCU to issue renewal notices. If you wish to continue working as a(n) Risk Assessor after this expiration date, you must successfully complete the required training and submit a completed application to this office prior to March 31, 2017. If you should perform lead-based paint activities as a(n) Risk Assessor without a valid North Carolina certification, you will be in violation of State regulations and may be cited for noncompliance.

If you have any questions, please contact our office at (919) 707-5954.

Sincerely,

Ed Norman
Program Manager
Health Hazards Control Unit

Enclosure

North Carolina Department of Health and Human Services
Division of Public Health

Pat McCrory
Governor

Richard O. Brajer
Secretary

Daniel Staley
Acting Division Director

October 8, 2015

Sandra Sechler
Get The Lead Out LLC
2121 Commonwealth Ave Ste 202
Charlotte NC 28205-5100

Dear Sechler:

Based upon the review of your Lead Firm Certification application, the Health Hazards Control Unit (HHCU) has determined that you have fulfilled the requirements and are eligible for Lead Firm Certification. Your assigned certification number is FPB-0002, which is reflected on your enclosed North Carolina Lead Firm Certification certificate.

Your North Carolina Firm Certification will expire on October 31, 2016. It is not the policy of the HHCU to issue renewal notices. If you wish to remain a certified firm after this expiration date, you must submit a completed application to this office prior to October 31, 2016. If you should continue to perform lead-based paint activities without a valid North Carolina firm certification, you will be in violation of State regulations and may be cited for noncompliance.

If you have any questions, please contact the HHCU at (919) 707-5950.

Sincerely,

Ed Norman
Program Manager
Health Hazards Control Unit

Enclosure

www.ncdhhs.gov • www.publichealth.nc.gov
Tel 919-707-5950 • Fax 919-870-4808
Location: 5505 Six Forks Road • Raleigh, NC 27609
Mailing Address: 1912 Mail Service Center • Raleigh, NC 27699-1912
An Equal Opportunity / Affirmative Action Employer

North Carolina Public Health

RADIOACTIVE MATERIALS BRANCH
RADIATION PROTECTION SECTION
N. C. DEPARTMENT OF HEALTH AND HUMAN SERVICES

RADIOACTIVE MATERIALS LICENSE

Pursuant to North Carolina Regulations for Protection Against Radiation and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, own, possess, transfer, and import the accelerator(s) listed below; and use such accelerator(s) for the purpose(s) and at the place(s) designated below. This License is subject to all applicable rules and regulations of the North Carolina Department of Health and Human Services now and hereafter in effect and to any conditions specified below.

1. Licensee Name: Get the Lead Out, LLC	**3. License No:** 060-0989-1 — **License Type** 00310
2a. Mailing Address: 2121 Commonwealth Avenue, Suite 220, Charlotte, NC 28205-5120	**4. Expiration Date:** December 31, 2019
b. Physical Address: 2121 Commonwealth Avenue, Suite 220, Charlotte, NC 28205-5120	**Application Type:** Amendment Application
c. Radiation Safety Officer: Peter M. Hubicki,	**5. a. Amendment No.:** 12 **b. Issuance Date:** May 09, 2014

6. Radioactive Material (element and mass no.)	7. Chemical and/or Physical Form	8. Maximum Amount of Radioactivity and/or Quantity of Radioactive material which Licensee May Possess at Any One Time.
A. Cobalt 57	A. Sealed Source	A. Total Possession not to exceed 60.00 mCi No Single source to exceed 12.00 mCi
B. Cadmium 109	B. Sealed Source	B. Total Possession not to exceed 500.00 mCi No Single source to exceed 50.00 mCi
C. Americium-241 / Beryllium	C. Sealed Source	C. Total Possession not to exceed 50.00 mCi No Single source to exceed 10.00 mCi

9. Authorized Use:

A. To be used in an RMD Model LPA-1 X-ray Fluorescence Analyzer to test for lead content in paint. Sealed Source & Device Registry No. MA-0573-D-103-B, with a leak test frequency of twelve months.

B. To be used in a Niton Model XLp 300 analyzer to test for lead content in paint. Sealed Source & Device Registry No. MA-1159-D-101-B, with a leak test frequency of six months.

C. To be used in a Niton Model XLp 300 analyzer to test for lead content in paint. Sealed Source & Device Registry No. MA-1159-D-101-B, with a leak test frequency of six months.

CONDITIONS

10. A. The authorized place of receipt and storage of radioactive material is the licensee's address stated in condition 2b. above.

B. Additional authorized places of receipt and use of radioactive material are listed below if applicable:

No Additional Locations

C. Radioactive materials may be used at temporary jobsites of the licensee throughout the State of North Carolina in areas not under exclusive Federal jurisdiction (Federal installations such as military bases, V.A. Hospitals, etc.). Authorization for the use of radioactive materials at temporary jobsites under exclusive Federal Jurisdiction shall be obtained either by (1) filing a NRC Form 241 [10 CFR 150.20(b)], or (2) applying for reciprocity, or (3) applying for a specific license from the NRC if the length of the job is to exceed six (6) months.

D. This condition does not prohibit the use of radioactive materials in other states; however, before radioactive materials can be used at a temporary jobsite in another state, authorization must be obtained from the State, if it is an Agreement state, or from the Nuclear Regulatory Commission for any non-Agreement State, either by filing for reciprocity or applying for a specific license.

11. The licensee shall comply with the provisions of 15A NCAC 11 .1600 "Standards for Protection Against Radiation," and 15A NCAC 11 .1000 "Notices, Instructions, Reports and Inspections." (The North Carolina Regulations for Protection Against Radiation are contained in 15A NCAC 11.)

WITHHOLD FROM PUBLIC DISCLOSURE UNDER N.C.G.S. 104E-9(a)(4) EXCEPT TO INDIVIDUALS WITH A NEED TO KNOW

RADIOACTIVE MATERIALS LICENSE

12. A. Licensed material shall only be used by:

    Peter Hubicki

    OR individuals who (1) have successfully completed a manufacturers training program for gauge users, (2) have been instructed in the licensee's routine operating and emergency procedures, and (3) have been designated in writing as having completed these requirements by the Radiation Safety Officer.

    B. Records of these designations shall be maintained for three (3) years after the company no longer employs the individual.

    C. The licensee shall establish a method of identification and documentation of training for the persons authorized in condition A above. This shall be made available for review by the agency at the time of either a field or home office inspection.

    D. The Radiation Safety Officer for the activities authorized under this license shall be Peter M. Hubicki.

13. A. Each sealed source containing radioactive material, other than Hydrogen 3 with a half-life greater than thirty (30) days and in any form other than gas, shall be tested for leakage and/or contamination at intervals prescribed in the respective Registry of Radioactive Sealed Sources and Devices sheet. In the absence of a Registry of Radioactive Sealed Sources and Devices sheet, tests for leakage and/or contamination shall be conducted at intervals not to exceed six (6) months, except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed three (3) months. In the absence of a certificate from a transferor indicating that a test has been made within six (6) months prior to the transfer, the sealed source shall not be put into use until tested.

    B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the agency.

    C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with agency regulations. A report shall be filed within five (5) days of the test with the **Radioactive Materials Branch, Radiation Protection Section, 1645 Mail Service, Raleigh, NC 27699-1645,** describing the equipment involved, the test results, and the corrective action taken.

    D. Tests for leakage and /or contamination shall be performed by persons specifically authorized by the agency to perform such services.

14. The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provision of Section 71.5, Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material For Transport."

15 Sealed sources containing radioactive material shall not be opened or removed from their respective source holders by the licensee.

16. The licensee shall keep records for each device authorized in this license showing which authorized user has the device, the time and date the device was removed from storage, job where device was used and the time and date the device was placed back into storage. Records of use shall be kept for two (2) years for inspection by the agency or until they have been reviewed by the agency and if the records are determined to be satisfactory, then they may be disposed of.

17. The licensee shall conduct a physical inventory of all sealed sources received and possessed under this license at intervals not to exceed six (6) months. Records of the inventories shall be maintained for inspection by the agency and shall include the quantities and kinds of radioactive material, location of sources and the date of the inventory.

18. In addition to the possession limits in condition 8 above, the licensee shall further restrict the possession of licensed material to quantities below the minimum limit specified in 15A NCAC 11 .0353 for establishing decommissioning financial assurance.

19. The licensee shall annually review its Radiation Protection Program for content and implementation [Reference 15A NCAC 11 .1603(c)]. Documentation of the Radiation Protection Program reviews shall be retained for inspection by the agency [Reference: 15A NCAC 11 .1636].

20. The licensee shall institute the provisions of 15A NCAC 11 .1610 when an occupationally exposed woman voluntarily informs her supervisor, in writing, of the pregnancy and the estimated date of conception.

RADIOACTIVE MATERIALS LICENSE

21. The licensee shall ensure that no individual "member of the public" [Reference: 15A NCAC 11 .0104(81)] receives a radiation dose in excess of the limits specified in 15A NCAC 11 .1611(a) while conducting licensed activities.

22. This license may be subject to amendment, revision, modification, suspension, or revocation in accordance with the provisions of 15A NCAC 11 .0344.

23. In addition to the possession limits referenced in condition 8. above, the licensee shall further restrict possession of radionuclides listed in the table below to the quantities noted within the table. Sum of fractions for the radionuclides listed below shall not exceed

Radionuclide	Quantity (curies)	Radionuclide	Quantity (curies)
Am-241	16	Pm-147	10,800
Am-241: Be	16	Pu-238	16
Cf-252	5.4	Pu-239:Be	16
Cm-244	13.5	Ra-226	10.8
Co-60	8.1	Se-75	54
Cs-137	27	Sr-90 (Y-90)	270
Gd-153	270	Tm-170	5,400
Ir-192	21.6	Yb-169	81

24. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in conditions 6., 7., and 8. of this license in accordance with statements, representations and procedures and attachments listed below. The *North Carolina Regulations for Protection Against Radiation* shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Letter with attachments dated May 12, 2011, signed by Peter M. Hubicki, RSO, email received May 18, 2011, and an administrative amendment to list Total Possession Limits and implement several updates.

B. Application with attachments dated October 2, 2009, signed by Peter M. Hubicki, RSO.

C. Application for with attachments, dated April 29, 2014, signed by Peter M. Hubicki, Asst. VP, RSO.

For: W. Lee Cox, III

Chief, Radiation Protection Section

Performance Characteristic Sheet

EFFECTIVE DATE: **September 24, 2004** **EDITION NO.: 1**

MANUFACTURER AND MODEL:

Make: *Niton LLC*

Tested Model: *XLp 300*

Source: ^{109}Cd

Note: This PCS is also applicable to the equivalent model variations indicated below, for the Lead-in-Paint K+L variable reading time mode, in the XLi and XLp series:

XLi 300A, XLi 301A, XLi 302A and XLi 303A.
XLp 300A, XLp 301A, XLp 302A and XLp 303A.
XLi 700A, XLi 701A, XLi 702A and XLi 703A.
XLp 700A, XLp 701A, XLp 702A, and XLp 703A.

Note: The XLi and XLp versions refer to the shape of the handle part of the instrument. The differences in the model numbers reflect other modes available, in addition to Lead-in-Paint modes. The manufacturer states that specifications for these instruments are identical for the source, detector, and detector electronics relative to the Lead-in-Paint mode.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Lead-in-Paint K+L variable reading time mode.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive)

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film).

If readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments into control before XRF testing proceeds.

SUBSTRATE CORRECTION:

For XRF results using Lead-in-Paint K+L variable reading time mode, substrate correction is <u>not</u> needed for:

Brick, Concrete, Drywall, Metal, Plaster, and Wood

INCONCLUSIVE RANGE OR THRESHOLD:

K+L MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted in August 2004 on 133 testing combinations. The instruments that were used to perform the testing had new sources; one instrument's was installed in November 2003 with 40 mCi initial strength, and the other's was installed June 2004 with 40 mCi initial strength.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Substrate correction is not needed for brick, concrete, drywall, metal, plaster or wood when using Lead-in-Paint K+L variable reading time mode, the normal operating mode for these instruments. If substrate correction is desired, refer to Chapter 7 of the HUD Guidelines for guidance on correcting XRF results for substrate bias.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing. Use the K+L variable time mode readings.

Conduct XRF retesting at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

- Compute the Retest Tolerance Limit by the following steps:
  - Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family housing a result is defined as the average of three readings. In multifamily housing, a result is a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.
    - Calculate the average of the original XRF result and retest XRF result for each testing combination.
    - Square the average for each testing combination.
    - Add the ten squared averages together. Call this quantity C.
    - Multiply the number C by 0.0072. Call this quantity D.
    - Add the number 0.032 to D. Call this quantity E.
    - Take the square root of E. Call this quantity F.
- Multiply F by 1.645. The result is the Retest Tolerance Limit.
- Compute the average of all ten original XRF results.
- Compute the average of all ten re-test XRF results.
- Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the Lead-in-Paint K+L variable reading time mode, the instrument continues to read until it is moved away from the testing surface, terminated by the user, or the instrument software indicates the reading is complete. The following table provides testing time information for this testing mode. The times have been adjusted for source decay, normalized to the initial source strengths as noted above. Source strength and type of substrate will affect actual testing times. At the time of testing, the instruments had source strengths of 26.6 and 36.6 mCi.

Testing Times Using K+L Reading Mode (Seconds)						
	All Data			Median for laboratory-measured lead levels (mg/cm^2)		
Substrate	25th Percentile	Median	75th Percentile	Pb < 0.25	0.25 ≤ Pb<1.0	1.0 ≤ Pb
Wood Drywall	4	11	19	11	15	11
Metal	4	12	18	9	12	14
Brick Concrete Plaster	8	16	22	15	18	16

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than or equal to the threshold, and negative if they are less than the threshold.

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.