RADIATION SAFETY PROGRAM

I. General

The Radiation Safety Program covers the procedures for the safe and proper use and possession of radioactive material as contained in portable LPA-1 Lead Paint Analysis System (XRF) used for analytical measurement of lead in paint. When handled in accordance with this plan, the radioactive materials present no hazard to the licensee's employees, customers, or the general public.

A. The Workforce Group requires that all employees utilize proper safety procedures when handling radioactive materials, that all activities relating to the procurement, shipping, receiving, handling, operation, storage, monitoring, calibration and administration of such materials be thoroughly documented in accordance with applicable federal and state laws and regulations, and that all terms and conditions of the Radioactive Materials License issued by the State of Louisiana, Registrations and Certifications Section will be adhered to.

B. These policies and procedures form The Workforce Group comprehensive radiation administration policy. This policy encompasses operations, operator training and licensing, responsibilities of the Radiation Safety Officer (RSO), transportation, maintenance, equipment testing procedures, theft or loss, fire, emergency procedures, record keeping and disposal/decontamination/decommissioning. The radiation administration policy ensures that all operating personnel are:

1. Thoroughly familiar with prescribed safe handling techniques and emergency procedures for radioactive materials.
2. Fully informed of the hazards posed by exposure to radioactive materials.
3. Thoroughly familiar with state, federal laws and regulations as well as terms and conditions of the license regarding radiation protection.

C. These procedures are consistent with the philosophy described in the U.S. Nuclear Regulatory Commission's Regulatory Guide 8:10 Operating Philosophy for maintaining Occupational Radiation Exposure as Low as Reasonably Achievable. This document states, in part, that persons engaged in activities under licenses issued by the NRC or state regulatory agency shall make every effort to maintain radiation exposures and releases of radioactive material in effluent as low as reasonable achievable (ALARA). Maintaining exposure as low as reasonably achievable is the fundamental purpose of all administrative controls.

D. These entire policies and procedures are considered to be an integral part of The Workforce Group Radiation Safety Program.

E. The RSO shall review the Radiation Safety Program annually on the anniversary date of the license.

II. Duties of the Radiation Safety Officer, (RSO)

A. The RSO has the primary responsibility for the administration and operation of the radiation safety program, in her/his absence the Alternate Radiation Safety Officer will be responsible for these duties. All use and possession of the radioactive materials is under the direction and supervision of the RSO. The RSO is the single point of accountability and responsibility between the Regulatory Agency and the Licensee. These responsibilities are repeated through out these policies and procedures for the purposes of emphasizing their importance. These duties include, but are not limited to the following:

1. To ensure that all terms and conditions of the license are being complied with and that the information contained is up-to-date and accurate.
2. Maintenance of source inventory wipes or leak tests. Dosimetry records shall be kept if an operator requests dosimeter monitoring or the RSO requires that the operator use a ring or wrist badge when operating the instrument.
3. To ensure that all pieces of equipment are properly secured against unauthorized removal, having knowledge of the whereabouts of the XRF instrument (s) at all times with the maintenance of the appropriate records.
4. Full knowledge of shipping, storage and emergency procedures.
5. Serve as a point of contact and give assistance in case of an emergency such as equipment damage in the field, theft, fire or presumptive overexposure and to notify the proper authorities in case of any emergency and complete proper records.
6. Ensure that all operators have read and understand the Radiation Safety Program as well as to arrange appropriate training for all operators.
7. Provide annual refresher training to all operators on operating, emergency procedures, transportation requirement, changes in applicable regulations or license conditions, and correction of deficiencies identified by the State Radiological Health Branch or the RSO.
8. Post all required signs and notices at the XRF storage location, Notice to Employees, a copy of the license, safety plan, and copy of the regulations. Caution signs are not required when <5 mR/hr @ 30cm (LAC 33v15 §452.D).
9. Authorize operators of the equipment, ensure that the equipment is only used by operators authorized by the RSO, and that the use of the equipment is in accordance with all relevant regulations.

B. The RSO must maintain all documents and records relating to the instrument, including but not limited to:

1. Company License, Device Registration and Administrative Records.
    a. The Workforce Group personnel licenses.
    b. Device registration(s) for instruments in possession.
    c. Training Certification (certificates) for all operators of the instrument(s).
    d. Reciprocity letters (if applicable) from other states where device is transported or used.
    e. Official correspondence from the Radiological Health Branch regarding or including inspection reports.
    f. Louisiana State Code of Regulations, Environmental Regulatory Code Part XV, Radiation Protection.
    g. Emergency Procedures including Employer's Presumptive Overexposure Report.

2. Shipping and Receiving Records
    a. Copy of shipping documents, (inbound and outbound).
    b. Copy of license of any persons the device is transferred to outside of the organization
3. Storage and Maintenance Records
    a. Leak or wipe test reports (annually).
    b. Physical inventory records
    c. Dosimetry reports - only if an operator requests one. None currently used.
    d. Instrument accountability records.
4. Record Keeping
    a. Radioactive Material License along with application forms.
    b. Personnel Dosimetry Reports (only if an operator requests a dosimeter)
    c. Inventory and Leak Test Records shall be maintained by the RSO. The XRF system(s) must be physically inspected to verify location every three months and leak tested annually. Leak test kits will be obtained from an N.R.C. licensed provider or by a testing laboratory licensed to do this work, (Stan Huber Consultants 815-485-4433) and must include swabs, moistening solution, and return container.
    d. The XRF Assay Device Accountability record shall be used to maintain a record of XRF storage and usage. This form will be maintained by the RSO.
    e. Training Certification - All inclusive
    f. Gauge/instrument inventory

III. Device Information

Name: LPA-1 Lead Paint Analysis System
Manufacturer: Protec Instrument Corporation, 38 Edge Hill Road, Waltham, MA 02451
Phone: 617-318-5064
Usage: Portable XRF application for measurement of lead in paint.
Calibration Required: None
Source Information:
Radioactive Material: Cobalt-57 (Co57)
Maximum Activity: 12 millicurie (12 mCi)
Chemical or Physical Form: Sealed source, special form N.O.S.

IV. Operator training/Licensed operators

A. The manufacturer of the LPA-1 analyzer, Protec Instrument Corporation will not deliver a system until operators have completed the radiation safety-training program by the factory. All users of the LPA-1 Analyzer will participate in the manufacturer (Protec Instrument Corporation) training. This training covers the fundamentals of radiation safety and proper use of the XRF system.

B. Licensed operators are directly responsible to the RSO for the safe use and storage of the XRF instrument(s). Each operator must be familiar with the material in this manual as well as the XRF instrument Operation Manual to assure safe usage.

C. The licensed operators must keep the RSO informed of the location of XRF systems that contain the radioactive sources at all times. If the exact address where the XRF device will be used is known in advance, it must be noted before leaving the office, or, if not known, must be forwarded to the RSO as soon as it is known.

D. The operator will exercise suitable control over the gauge at all times. At no time is it to be left unattended or in the possession of an unauthorized person.

E. When not being used for field measurements, the XRF will be locked and returned to its storage/transportation case.

F. When testing is completed, the XRF will be returned to its permanent place of storage as soon as possible. The XRF instrument will be maintained in an instrument storage safe located in our main office, Bldg. 3010, Room 103. Access to the instrument storage closet is limited to those having permission from the RSO. The RSO will monitor the use of the device and authorization of its users. All XRF operators are trained and will follow the manufacturer's recommendations for the use of the XRF system. A log sheet monitors the use of the instrument. The instrument must be checked out and logged on a user-tracking log at each use. When the instrument is returned, it will be logged on the tracking log, and then the instrument is stored under lock and key.

G. Due to the nature of the source and the system, no special handling equipment, labeling or shielding is required for this instrument beyond the factory provided carrying case.

H. Due to the nature of the source, when using the equipment, the operator or the RSO has the option to elect to have the operator wear the personnel-monitoring ring badge as obtained from ICN Dosimetry Services (800-666-4552). See Section VI on Dosimetry. When the operator is not using the equipment, the monitoring device will be kept in a radiation free, low heat area.

I. Operators will observe ALARA principles at all times to minimize any dose received: As Low As Reasonably Achievable.

J. The use of the instrument will be limited to the trained inspectors and those authorized by the RSO. The instrument key will not be available to unauthorized users. The RSO will monitor the use of the device and authorization of its users.

K. While the equipment is in the operators possession, the operator will have a:

1. Copy of the License
2. Copy of the Radiation Safety Program with Emergency Procedures, and Telephone Call- Down List.
3. Copy of the XRF Operating Manual.
4. Copy of the Current Leak Test Certificate.
5. Copy of training certificates.
6. Copy of appropriate shipping documents and case certification.

L. Temporary Job Sites:

1. The inspector will keep the analyzer locked at all times when not in use.
2. The inspector will keep the instrument with him/her at all times when in the field, with the instrument locked in a carrying case when not in use.
3. The locked case containing the instrument will not be left at any job site.
4. The operator will transfer the locked instrument after leaving the job site in his/her car trunk or back of the seat in the case of a pickup truck for transportation. Operators will follow guidelines in VII - Transportation Section. The device will be

secured with a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee. (10CFR30.34.i)

5. The user will follow the applicable State and Federal transportation rules and regulations.

V. Emergency Procedures

A. The emergency procedures described in this section are designed to prevent unnecessary radiation exposure to operating personnel and the public in the event of an accident involving the XRF device. The safety of the operator, bystanders and emergency service personnel should be the highest priority in an event of an accident.

B. The source materials used in the Protec Instrument Corporation's XRF systems are encapsulated in tungsten and securely mounted within each device. Although it is unlikely that the material could escape in the event of a severe accident or fire; an emergency program shall be in place to ensure that all eventualities are handled in the safest manner possible.

C. In the event of any accident, the first action to be taken must be to keep other people away from the site. Secondly, notify the following:

State Radiological Health Branch Emergency Number	(225) 765-0160
Louisiana Dept. of Environmental Licensing Division	(225) 765-0143
RSO – Lee Robinson	(228) 591-0048
Corporation, Device Manager	(800) 476-0652

D. If the analyzer is only superficially damaged and the device is in one piece with only a minor break in the housing, and the source is obviously in place.

1. Inspect the analyzer visually, from a distance, to determine any damage to the analyzer. Use a radiation survey meter if one is available.
2. If the source housing is intact, pick up the analyzer, place it in its storage container, and return it to the permanent storage area.
3. Call particular XRF Technical Assistance Department to ship the analyzer back to the factory, for repair. (See section IX Transportation)

E. If the analyzer is broken, severely damaged with parts strewn around, severely burned, or the source holder is damaged.

1. Rope off the damage site for 10 feet around the analyzer.
2. Call the Protec Instrument Corporation's Radiation Safety Officer, and the DEQ for assistance. The organization will secure the services of a certified and licensed expert radiation technician to assess the site with a survey meter to determine if the radioactive material is intact. Company personnel will not attempt any repairs.
3. The radiation technician will determine if the site is safe. The system will be removed and prepared for shipment to the factory for repair.
4. Call the manufacturer's Technical Assistance Department to ship the analyzer back to the factory for repairs.
5. See Section IV above for numbers to notify.

F. It is mandatory that the following precautions be adhered to in order to prevent the loss or theft of the XRF.

1. Always keep the device in a locked storage when not in use.
2. When in the field, lock the device in a vehicle (preferably the trunk) or in a field office.
3. When in the field, NEVER leave the device unattended.
4. Notify the State Radiological Health Department Emergency Number at (225) 765-0160, the local police at 911 and the manufacturer's Radiation Safety Officer (800) 476-0652 immediately in the case of loss or theft.

G. In the case of a fire:

1. Call the Fire Department (911).
2. Take appropriate action per Emergency Plan to protect personnel, neighbors, and property.
3. Notify the RSO, or the ARSO if the RSO is not available, and other emergency entities in Section IV, B.
4. Stand by to advise the firefighters as to the nature, locations, and potential hazards of the radioactive materials. Supply them with an information packet consisting of the facility layout and a data sheet of the equipment including a photograph. Be sure to include any other relevant information. E.g. explosives, other combustibles, etc.
5. Temperatures in an industrial fire will usually range from 500 degrees Fahrenheit at floor level to a high at the ceiling of 1400 to 1800 degrees Fahrenheit. Polyethylene and lead would melt in most fires, aluminum only in a severe fire. However, the source stainless steel capsule and its tungsten housing would not reach its melting point.

VI. Instrument Leak Testing

A. Radioactive devices must be tested, generally every six (6) months by regulations, to verify that the sealed source is not leaking. The LPA-1 is approved for a one-year leak test interval. The manufacturer’s paperwork for this interval is in the file. The leak test kits consist of (2) cotton swabs, wiped around the source area, placed in plastic bags, and then mailed to a lab for analysis. A source is considered leaking if more than .005 microcuries of removable contamination is found. A copy of the current leak test certificate must be kept with the instrument, and a second copy should be kept in the RSO's files for a minimum of three years. All instruments shall be leak tested by a NRC certified leak Test Company. The company used by the RSO is Stan Huber Consultants (800-815-485-4433). Leak tests will also be conducted by the manufacturer, Protec Instrument Corporation when a source change is completed. A copy of the current leak test certificate must be kept with the instrument, and a second copy should be kept in the RSO's files for a minimum of three years.

VII. Dosimetry

A. Due to the nature of the source, the LPA-1 does not require that anyone handling it wear a radiation badge or ring. Should a person using the instrument request a badge, or the RSO determine that the operator will use one, the following badge type(s) will be used by our organization:

Ring Badge or Wrist Badge will be used with a change period every 3-months. The badges will be obtained from ICN Dosimetry Services, 800-666-4552

In the case of use of a badge, a report showing the readings for the previous month, previous quarter, year-to-date and lifetime will be generated to ensure the user does not exceed the Maximum Permissible Dose (MPD) of the user's category.

The RSO will maintain for inspection documentation demonstrating that unmonitored individuals are not likely to receive an annual radiation dose in excess of 10 percent of the allowable limits in 10 CFR Part 20, or we will provide dosimetry processed and evaluated by an NVLAP-approved processor that is exchanged at a frequency recommended by the processor. Dosimetry if used will be ICN Dosimetry Services.

The Device Safety Evaluation (MA-0573-D-103-B, July 2, 2007) states that "under both open and closed shutter conditions, the radiation level at the hand of the operator was measured to be less than 0.3 millirem/hr (3 pSv/hr)." Assuming a 0.3 mrem/hr dose rate and 10% of the (lower) whole body limit (500 mrem/yr), this dose would be received at 208 days of 8-hr continuous instrument use. Anticipated use is less than 60 days per year and would not be continuous use. So the radiation level from this system and the dose to the operator will be less than 10 percent of the annual dose, and therefore dosimetry is not required. Also see paragraph IX-A.

VIII. Transportation

A. *Private Vehicle:*
   1. When the XRF is transported in a passenger vehicle, place the device shipping case in the trunk.
   2. When a station wagon or panel truck is used, secure the device case so that it cannot slide around.
   3. When carried in a six-passenger pickup with a service body, transport the device in the back with the storage lid locked.
   4. When a pickup is used, all attempts must be made to secure the device inside the cab, behind the seat, or the passenger side floor.
   5. In the event that is not possible to place the case inside, the case then must be secured to the bed of the vehicle to prevent movement and in such a way to prevent removal by a passerby.
   6. The device will be secured with a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee. (10CFR30.34.i)

B. A copy of the United States Department of Transportation (DOT) and International Atomic Energy Agency's Shipper's Certification, when applicable, will be stored in the instrument case at all times.

C. *Common Carrier:* When an XRF is shipped via a common carrier, a copy of the United States Department of Transportation and International Atomic Energy Agency's Shipper's Certification will be stored in the instrument case at all times when applicable. The shipping papers will indicate USA DOT, Type A package and will certify that the Protec Instrument Corporation device package conforms to all packaging requirements of the U.S. Department of Transportation (DOT) and International Air Transport Association rules and regulations regarding the shipment of radioactive materials. The package conforms to the

conditions and limitations specified in 49 CFR 173.424 for "Excepted Package, Radioactive Material, Instruments and Articles, UN 2910". Instrument will be locked in its carrying case and placed in a well-packed insulated transport box provided by the factory for transport. No labeling is required for transportation purposes.

D. Copies of all shipping and receiving records shall be maintained by the RSO.

IX. Securing Instrument in the Field

A. The inspector will keep the analyzer locked at all times when not in use. The device will be locked using the keyed lock on the device, and the heavy-duty case will then also be locked

B. The inspector will keep the instrument with him/her at all times when in the field, with the instrument licked and in a locked carrying case when not in use.

C. When the device is not being used in the field, the device will be placed in a locked vehicle (preferably the trunk) or in a locked field office.

D. If in the inspector's judgment, the location does not appear safe to leave the device locked in the vehicle, then the instrument will be taken with him/her so the device will be under the control and constant surveillance of the licensee.

E. The locked case containing the instrument will not be left at any job site.

X. Instrument Calibration & Repairs

A. The LPA-1 analyzer is a self-contained device with a 12-mCi Co57 source. The radiation level from this system and the dose to the operator in minimal. The Device Safety Evaluation (MA-0573-D-103-S) states that the maximum radiation at any point of the system is less than 0.3 mRem/hr at 30 centimeters. The use of Radiation Detection Instrumentation is not applicable.

B. The manufacturer will conduct all repairs and calibration. No employee will perform any adjustment or repairs to the LPA-1 device.

XI. Waste Disposal

A. Source replacement is conducted by Protec Instrument Corporation, the manufacturer of the LPA-1 device. The manufacturer will be responsible for proper disposal of the source.

XII. Training and Experience

A. The manufacturer of the LPA-1 analyzer, will not deliver a system until operators have completed the radiation Protec Instrument Corporation, safety-training program. All users of the LPA-1 analyzer will participate in manufacturer (Protec Instrument Corporation,) training. This training covers the fundamentals of radiation safety and proper use of the XRF system. A copy of certifications will be provided to your office.

XIII. Facilities and Equipment

A. The XRF instrument will be stored in a fireproof safe located in our Main office, Bldg. 3010, Room 103. The campus where the building is located is gated with onsite security. Due to the nature of the source and the system, no special handling equipment or shielding is required for this instrument.

XIV. Radiation Protection Program

A. The radiation protection program procedures in place are established to ensure compliance with the provisions of the State rules and regulations, Louisiana.

B. Our radiation safety program is to follow the ALARA concept in storage and operation of any unit containing radioactive material.

C. The applicable sections of radiation safety program along with a copy of the device manual containing operating and emergency procedures are made available to all users of this device.

XV. Authorized use:

A. The use of the instrument will be limited to the trained inspectors and those authorized by the RSO. The storage cabinet key will not be available to unauthorized users. The RSO will monitor the use of the device and authorization of its users. All XRF operators are trained and will follow the manufacturer's recommendations for the use of the XRF system.

XVI. Storage:

A. The XRF instrument will be stored in a locked fireproof safe located in our Main office, Bldg. 3010, Room 103. There are 3 independent barriers. The campus where the building is located is gated and a badge is required to enter. Once you enter the campus you will need to unlock the office, and once you enter the room, you will need to unlock the safe. The campus also has onsite security. Due to the nature of the source and the system, no special handling equipment or shielding is required for this instrument. A log sheet monitors the use of device. The device must be checked out and recorded on a user-tracking log at each use. When the device is returned, it will be logged on the tracking log, and then the device is stored under lock and key.

XVII. Temporary job site:

A. Security of the device at off-site locations will be the responsibility of each Inspector and the RSO. The instructions to the operators include:

1. The inspector will keep the analyzer locked at all times when not in use.
2. The inspector will keep the instrument with him/her at all times when in the field, with the instrument locked in a carrying case when not in use.
3. Leak test certification along with operation manual containing the emergency procedures will be kept with each device.
4. The locked case containing the instrument will not be left at any job site.

5. The operator will transfer the locked case containing the instrument after leaving the job site in his/her car trunk or back of the seat in case of a pickup truck for transportation.
6. The user shall follow the applicable State and Federal transportation rules and regulations.

XVIII. Repairs:

A. The manufacturer will conduct all repairs and no employee will perform any adjustment or repairs to the XRF system.

XIX. Personnel Monitoring Procedures:

A. Each employee using the instrument will be monitored utilizing film badges and will be trained by the instrument manufacturer for safe operation of the device. The film badge supplier is Siemens Gammmasonics, Inc., (FB,TL) 800/ 666-4552.

XX. Leak Testing

A. The source in the LPA-1 analyzer is a sealed source and requires leak testing every six months. A certified leak-testing laboratory will be used for this purpose. All leak test records will be maintained for a minimum of three years. The Leak Test supplier is Stan Huber Consultants.

XXI. Instrument and Calibration

A. The LPA-1 analyzer is a self-contained device with a 12 mCi source. The radiation level from this system and the dose to the operator is minimal. The Device Safety Evaluation (MA-0573-D-103-S) states that the maximum radiation at any point of the system is less than 0.3 mRem/hr at 30 centimeter. The use of Radiation Detection Instrumentation is not applicable.

XXII. Waste Disposal

A. Source replacement will be conducted by the manufacturer Protec Instrument Corporation. The manufacturer will be responsible for disposal of the source.

XXIII. Transportation:

A. The transpiration of the XRF device to field location and manufacturer repair will be in accordance with the applicable sections of the State regulations for Louisiana and 49CFR DOT regulations. The packaging and labeling of each device will follow the applicable sections of the State and DOT rules. Transportation section of the instruction manual for this device is attached for further detail.

XXIV. Emergency Procedures:

A. The operators will follow the manufacturer's recommended Emergency Procedures. A copy is attached.

XXV. Radiation Safety Officer:

A. The Radiation Safety Officer (RSO) has the responsibility to coordinate the safe use of the XRF system and ensure compliance with all license conditions and the applicable State and Federal regulations.

B. The RSO responsibilities will include:

1. Implementing the Radiation Safety Program for ALARA concept
2. Assuring compliance with the license conditions including the type and activity of the licensed material.
3. The safe keeping of the device in storage and temporary job sites.
4. Limiting the accessibility and use of the device to authorized users.
5. Performing and maintaining the records of the required conditions of the license such as leak-test.
6. Monitoring and maintaining all records concerning individual exposure and site monitoring.
7. Reviewing the proper operation and emergency procedures of the device with individual users.
8. Assuring the proper working condition of the XRF system and maintaining the labels in legible condition.
9. Reporting sale or transfer of the device to RMD and the State regulatory agency assuring the transferee is properly licensed by the State agency.
10. Reporting damage and theft of the device to manufacturer and also regulatory agency.
11. Assuring the proper packaging and labeling of the device for transportation to job sites, manufacturer for repair, and disposal.

XXVI. Physical Inventory Procedure

A. Each quarter, the RSO will perform a physical inventory using TWG's XRF inventory checklist. The check will verify by serial number the presence of each XRF analyzer and its condition. The Physical inventory checklist will be used to verify the sign in/out log, the asset management, and inspection database.