

June 18, 2011

Shawn Seeley
U.S.N.R.C. Region 1
475 Allendale Road
King of Prussia, PA 19406-1415

Re: Request for additional information Control # 574341

Dear Shawn:

The following information will hopefully resolve some unanswered questions. Information provided corresponds to your letter dated 5/25/11.

#1 Q/C Resource Technical Services will NOT be taking and analyzing leak test samples. We will only be using approved leak test kits provided by others to perform "typical leak testing wipes" on sealed source gauges.

#2 The maximum limit for Cesium 137 requested will not exceed 500 millicuries at any one time.

#3 Q/C Resource Technical Services will not be a distributor of gauges. This word was misused because we received 2 bills from the USNRC this year, one for the "service" license, and they said I had to pay another for "distributing" gauges. As you inferred, we may at times "redistribute" gauges that once belonged to other clients, and only to those who hold a valid license to receive such gauges/ licensed materials from the NRC or any Agreement State. Copy of the "clients" license will be kept on file. All transfers are documented tracing the gauge from the original owner (who Q/C Resource Technical Services acquired it from) to the end purchaser / possessor.

#4 Enclosed is the training class schedule along with the exam. This class meets what is required in Appendix D of NUREG-1556, Volume 1, Revision 1, and Appendix H. After the exam is taken, it is corrected and reviewed by the instructor with all the students. Students are informed of any recent "incidents" as published by the NRC and ones I am aware of such as the recent accident in NJ.

#5 Weld inspections will only be performed on Troxler Electronics Model 3400 / 4640 series gauges. Weld "repairs" will NOT be done if required, these gauges would be shipped back to the manufacturer. The "inspection" is done by placing the source rod in a specially designed lead pig from InstroTek Inc. with an opening at the weld "line". I have been performing this type of inspection since 2001.

#6 / 7 Repairs to the gauges are typical "electronic" repairs and have nothing to do with tampering with the sealed sources. The moisture source is left intact in the gauge base and the source rod is removed, and within 2 seconds is in the lead pig on the floor (this procedure in NO way exceeds the 10 CFR 20.1301 limits). There are no other unauthorized individuals around when this is done, and in the future should there be, they would be properly trained and wear NVLAP monitoring badges and of course not standing near the rod being removed until in the lead pig. There are no components being used for repairs that in anyway effect the engineering safety analysis performed by the manufacturer as part of their device registration. Gauges are calibrated according to ASTM procedures which will

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determine operability. Such repairs do not effect the public regarding "doses" of radiation and I have never exceeded 350 mRem/yr whole body exposure performing the repairs since 2001 which are well below the 5000/yr limit. Extremity dosimeters are not required because in no way will that exceed 1800 mRem. Furthermore, the source rod is 95% of the time NOT present in the gauge when repairs are being performed. Q/C Resource Technical Services currently possesses 2 approved radiation survey meters that are calibrated every year and kept on file. Should the "general public" enter the facility, in no way will they approach or exceed the 500 mRem/yr exposure or the area exposure exceeding 2 mR/hr. Threshold. Caution Radiation signs are visible at the secured storage room entrance along with the "Notice to Employees" document.

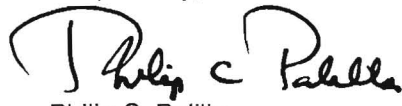
Regarding Section 20.2103, Q/C Resource Technical Services will have 1 area monitoring badge set up at the office / shop to monitor area exposure to comply with subpart (a), (b), and (1). The other parts 2 through 4 do not apply.

#8 The current audit program has been downloaded for service providers which will replace the old one we now have on file. Copies of the completed annual audit will be kept on file. No unauthorized individuals will be in the office / shop. Gauges are stored in the back storage room which is locked, and the gauges are locked in their case inside the room. The 3 of 4 walls are concrete block, with the wall facing the workbench "lined" with solid concrete block to limit exposure even though it's not required. Gauges going through the "calibration area" are also shielded with solid concrete block. If in the future an employee is hired, they will be qualified / trained before conducting licensed activity. Philip C. Palilla is the owner and RSO. Survey meters to comply with section 8.10.2 have already been addressed. If the business is moved / transferred, a survey will be conducted to ensure there is no contamination at this site even though these are sealed sources. Records will be kept.

#9 Q/C Resource Technical Services will follow the manufacturer's procedures for inspection, maintenance, (not source exchange), and operations that involve the sealed sources and safety systems where applicable. Gauges are logged in and out and stored in such a manner as to comply with the transportation security seals (locks and or ties to show if the package was tampered with during transportation) and the "two independent barrier" criteria.

I hope these have addressed your concerns and of course, please call if more clarification is needed.

Respectfully,



Philip C. Palilla

INTRODUCTION

Our job involves measurement of the density and moisture content of soils, and the density, and asphalt content of asphaltic concrete. While we can use conventional techniques such as sand cones, cores, and extractions, special instruments will do the measurements faster and more conveniently. Since these instruments contain radioactive materials, which can be dangerous if not used properly, we need special training.

Completion of this class will satisfy the minimum regulatory requirements that:

- 1) You are an informed occupational worker. You will not be an expert, but you will have sufficient information to use the gauge in a manner safe for; yourself, your fellow workers, and the general public.
- 2) Allow you to possess and use on your employer's license, portable moisture density gauges containing radioactive material, without immediate supervision.
- 3) Qualify you to be the radiation safety officer of a company with a few gauges.

Class Schedule

8:00 AM	Introduction
8:30 AM	Atomic Physics
9:00 AM	Radioactivity
9:30 AM	Break
9:40 AM	Health And Safety
10:20 AM	Regulations
11:30 AM	Transportation
11:45 AM	Lunch
1:00 PM	Gauge Theory
2:00 PM	Calibration
2:30 PM	Gauge Operation
2:45 PM	Break
3:00 PM	Gauge Operation (continued)
3:15 PM	Quiz
3:35 PM	Quiz Review
4:00 PM	Field Work - done by the owner of the students company

At the successful completion of the class and quiz you will be issued a Certificate of Training. A copy should be retained for review by regulatory agencies.

A "dummy" gauge is used during classroom instruction. At times a real gauge will be used but only at the students office.

Name _____

Date _____

Orgn _____

City _____

State _____

HUMBOLDT SCIENTIFIC, INC.
Radiation Safety Training, Final Exam

These questions will require either True/False or multiple choice answers. There are no "trick" questions but the multiple choice will require the "most correct answer". Read the question carefully.

A credit of two points is given for each correct True/False answer and four points for each correct multiple choice. A total of sixty points is required for passing.

If the answer is not quickly apparent, skip that question and continue with the test. A thirty minute time limit is imposed and after completion you may go back to the questions that you could not answer on the first attempt.

1. Different isotopes of an element have the same atomic number but different atomic weights. T/F T
2. The four main types of radiation are called alpha, beta, gamma and nucleus. T/F F
3. Radiation is one mechanism that produces ionization. T/F T
4. Alpha, beta, gamma and neutrons can all be called ionizing radiations. T/F T
5. Radiation particles or photons may lose part of their energy through ionization. T/F T
6. One curie is the amount of radioactive material in which 3.7×10^{10} atoms disintegrate every second. T/F T
7. The half-life of a radioactive material is the amount of time it takes for one-half of its atoms to disintegrate. T/F T
8. The roentgen (R) is a unit used to measure gamma or x radiation only. T/F T
9. The rem may be used as a unit to measure any type of ionizing radiation. T/F T
10. Radioactive atoms inside of a capsule are called contamination. T/F F
11. Contamination can be spread by tracking, smearing, or becoming airborne. T/F T
12. Alpha-particle radiation causes little external damage but can be a serious internal hazard. T/F T
13. Beta particles are very difficult to stop because of their small mass and charge. T/F F
14. The hands and feet can tolerate a larger radiation dose than the blood-forming organs can tolerate. T/F T
15. The very small sources of radiation in gages used to measure moisture and density of construction materials could never cause harm to the user. T/F F

16. Gamma radiation is used to measure density and neutron radiation is used to measure moisture. T/F T
17. It is quite safe to clean the rod containing the gamma source by rubbing it with bare hands since the probability of contamination is very low. T/F F
18. Sealed sources of radioactive materials must be tested for leakage on a periodic basis to assure safe use. T/F T
19. If a gage containing radioactive materials is misplaced for a few days, it is not necessary to notify your Radiation Safety Officer since it probably will be found at the next inventory. T/F F
20. An unlicensed user may borrow a gage containing radioactive materials from a licensed owner for a short period of use provided that it is returned. T/F F

SELECT THE MOST CORRECT ANSWER

21. Which unit may be used only to measure dose rates due to gamma radiation? A/B/C/D A
- A mr / h
B mrad / h
C mrem / h
D mCi
22. Which radiation is the least penetrating? A/B/C/D B
- A Neutron
B Alpha
C Beta
D Gamma
23. When leaving at the end of the day, your dosimeter may be safely left at the following location. A/B/C/D D
- A Stored with the gage
B Left in the work vehicle
C Taken home for safety
D Left in a secure location at the office / lab
24. If the dose rate at six inches from the gage is 0.8 mr em / h, the dose rate at 12 inches will be: A/B/C/D C
- A 1.6 mr em / h
B 0.4 mr em / h
C 0.2 mr em / h
D 2.4 mr em / h
25. At the location where gages are stored, the best shielding material is: A/B/C/D A
- A Concrete or high density block
B Wood partitions
C Metal partitions
D Thermal insulating materials
26. When a gage is not in use, it may be: A/B/C/D C
- A left at the construction site locked in its transit container.
B taken home and securely stored at your house.
C locked in a secure facility with the source in the safe or shielded condition.
D None of the above.

27. When transported in a vehicle the gage must be:

A/B/C/D B

- A in the passenger compartment of the vehicle.
- B in the trunk of an auto or rear of a truck with the source rod and case locked.
- C Either of the above.
- D None of the above.

28. A moisture-density gage may be used to:

A/B/C/D D

- A measure the moisture and density of soils.
- B measure the specific gravity of asphalt.
- C irradiate seeds to see what peculiar plants are produced.
- D only perform those specific applications described in the owner's Radioactive or By-product Material License.

29. Some service of the gage may require removal of the rod containing the gamma source. This may be done under the following conditions:

A/B/C/D/E E

- A A shielded container is available.
- B The technician is properly trained or follows detailed instructions.
- C The owner's license specifically allows the removal of the source for service to the gage.
- D A and B
- E All of the above.

30. An owner may store and use devices containing radioactive materials at:

A/B/C/D D

- A Any location within the jurisdiction of the licensing agency.
- B Anywhere within the United States under a license issued by the Nuclear Regulatory Agency.
- C In any Agreement State provided the license was issued by one of the Agreement States.
- D Only in those locations specifically listed in the owner's license or in other jurisdictional areas under reciprocity after prior notification.

31. Owners and users are obligated to maintain personnel radiation exposures to:

A/B/C/D D

- A less than the statutory maximums.
- B as low as reasonably attainable consistent with the requirements of performing the specific function of use.
- C a minimum value, but may exceed the quarterly maximum provided the annual maximum times the individuals age less 18 years is not exceeded.
- D All of the above.

32. Persons using devices containing radioactive materials must be:

A/B/C/D C

- A the legal owner of the device.
- B named on the owner's material license.
- C any individual trained under an approved course given by the licensee's Radiation Safety Officer or other organizations licensed to provide the training.
- D trained only by the gage manufacturer.

33. Any individual may report a violation of safety regulations to:

A/B/C/D D

- A the owner of the radioactive material.
- B the Radiation Safety Officer.
- C the jurisdictional agency responsible for issuance of the material license.
- D Any or all of the above.

34. Devices containing radioactive materials given to a common carrier for shipment must be accompanied with:

A/B/C/D E

- A a shippers certification for hazardous materials.
- B a secured transit case with the proper labels.
- C a current leak test certificate.
- D a sealed source and transit case certificate.
- E Only A and B

35. If a licensed owner has a device containing radioactive material for which he has no further use, he may:

A/B/C/D/E/F/G F

- A keep it and maintain a license and proper storage.
- B transfer it to another licensee for use or disposal.
- C ship it to the jurisdictional agency who issued his license.
- D bury it in a landfill provided he is certain that it will never be uncovered.
- E Any of the above.
- F Only A or B
- G A, B, or C

For Instructors use only.

Correct answers to questions 1 through 20 _____ x 2 = _____

Correct answers to questions 21 through 35 _____ x 4 = _____

Total points = _____

Circle one: Passed Failed

Instructors Name _____

Organization _____

Signature _____

Date _____