



3900/759000.58

Mr. Thomas Thompson  
U.S. Nuclear Regulatory Commission  
Region 1  
Nuclear Material Section  
631 Park Avenue  
King of Prussia, Pennsylvania 19406

MS 16  
P7

Dear Mr. Thompson:

Each of the questions you have regarding the licensed material at the Research and Development Center (NRC License 06-16731-01) is answered below.

Regarding the material contained in the Campbell Engineering K Series Density Gauge:

1. What training will operators of the device receive?

Operators of the device will be trained by the RSO or an authorized instructor under his supervision. Each operator at a minimum will receive instruction in the safe use of the Campbell Density Gauge and general radiation safety, as detailed in enclosure (1). Coast Guard personnel received training at Campbell Engineering facilities on 16 April 1985. Additional factory training is scheduled at the R&D Center for 7 June 1985.

2. Who will perform the "wipe" test and who will evaluate the results?

The "wipe" test will be performed by the RSO or an authorized technician under his supervision, following the instructions provided with the Leak Test Kit, enclosure (2). The test results will be evaluated by Chemical Waste Management, Inc. (NRC License 20-14082-02), 5 Strathmore Road, Natick, Massachusetts 01760.

3. How will the Campbell Density Gauge be secured during transportation?

The device will normally be transported in a closed vehicle locked in its shipping container. When being transported in an open vehicle such as the back of a pick-up truck or an open boat, the device will be actually in the possession of authorized Coast Guard personnel.

4. What will the R&D Center do with the gauge when they are done with it?

The device will be returned to the manufacturer, transferred to a licensed disposal agency, or transferred to another licensed user. A record of the transfer, including a copy of recipient's license, will be maintained by the RSO.

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5. What are the procedures for handling a radiation emergency involving the device?

Emergency procedures are detailed in the "pink pages" of enclosure (1). A copy of these emergency procedures will be maintained with the device.

6. What security arrangements are provided for the device?

When in use the device will be attended by an authorized operator. At all other times the device will be locked in its shipping container and stored in a secure room.

Regarding the material contained in the gas chromatograph detectors:

1. What security arrangements are provided for the devices?

When in use the licensed material is always attended by authorized personnel. At all other times the instruments are securely locked.

2. What are the leak test procedures?

Semi-annual leak tests are performed following the procedures described in enclosure (2). The tests are evaluated by Chemical Waste Management, Inc. (NRC License Number 20-14082-02).

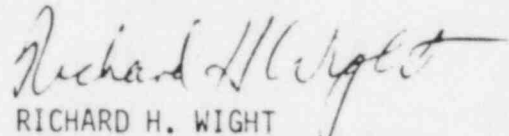
In order to update our application for renewal, we request the following changes:

Item 5(c)

	Element and Mass Number	Chemical and/or Physical Form	Maximum amount which will be possessed at any one time
<u>Delete</u>	Nickel 63	Foil in Valco model 140BN detector cell	Not to exceed 5 millicuries per source
<u>Add</u>	Hydrogen 3	Foils contained in Analytical Instrument AIDS Model 510-6007 detection cell	Not to exceed 200 millicuries per source

If we can provide any additional information, please do not hesitate to call Dr. Chi-Wu Su (RSO) at 203/441-2708 or Lieutenant Tom Briggs at 203/441-2730 directly.

Sincerely,



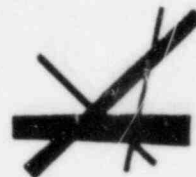
RICHARD H. WIGHT  
Captain, U. S. Coast Guard  
Commanding Officer, Acting

Encl: (1) Radiation Safety Training Program for Operators of the  
Portable Contraband Detector  
(2) Leak Test Kit Instructions

# LEAK TEST KIT

## INSTRUCTIONS

1. Carefully review the brochure "Leak Test Service."
2. Select either the filter paper disc or swab based on type of source and radiation levels.
3. Dissolve alconox powder in 10 ml water and lightly moisten either disc #1 or swab #1.
4. Wipe all accessible surfaces of the radioactive source - for high level sources storage container may be wiped after the source has been removed.
5. Allow swab or disc to dry. Return to envelope and reseal.
6. Repeat process with disc #2 or swab #2. Do not moisten them. Return to envelope and reseal.
7. Fill out the form entitled "Leak Test Report" and place it with this folder containing the smears in the return envelope which is provided.
8. Important: Before sending smears through the mail they should be surveyed with a radiation detector to verify that radiation levels are less than 0.4 mr/hr. If levels exceed 0.4mr/hr the smears cannot be sent via mail and leakage will certainly exceed 0.005 microcurie. When smears indicate leakage in excess of 0.005 microcuries a report must be made to the AEC within 5 days.



Chemical Waste Management, Inc.

5 Strathmore Road

Natick MA 01760



## Chemical Waste Management, Inc.

### Leak Test Service Model STL-1

Nuclear Regulatory Commission regulations state that certain sealed sources must be tested for leakage every six months. The responsibility for compliance with leak test requirements rests on the persons licensed to possess the source. For those who are not equipped to perform the required periodic leak tests, or who otherwise do not wish to do it themselves, Chemical Waste Management offers a simple and convenient method for fulfilling these NRC requirements. The standard leak test kit contains both filter discs and cotton tipped applicators for use with either low level or high level sources.

If you possess radioactive material under the general license provisions of 10CFR30, or if you have an NRC license which does not specifically state that you may perform all portions of the leak tests, then you must apply to the NRC for a license which will specifically permit you to make the smears. In this request you must state where the smears are to be made and indicate that they will be made in accordance with these instructions.

#### A. FILTER PAPER DISCS

The filter paper discs are for use with alpha sources, beta sources which can be safely handled behind a plastic shield, or low level gamma sources where the total radiation exposure to the whole body during the wipe test procedure is calculated not to exceed 5 milliroentgens.

#### CAUTION

1. Alpha or beta sources in excess of 0.1 millicurie should be handled with 12" tweezers or forceps. Smear tests on beta sources in excess of 1 millicurie should be performed behind a plastic shield having a minimum thickness of 3/8". Rubber gloves should be worn to help minimize the dosage to the hands. All accessible surfaces of the source should be thoroughly wiped, taking special precautions to avoid puncturing any thin windows. Always keep the source at a maximum distance from you and never expose yourself to the direct rays of the source. Where a source is permanently fixed into a system the closest and most easily accessible surface, such as the conical port, source housing, etc., may be taken as the smear area.
2. Gamma sources can be smeared by this method if by calculation it is shown that the whole body exposure will not exceed 5 milliroentgens. This test can be easily accomplished with Co-60 sources up to 40 mCi and Cesium-137 sources up to 150 mCi. Always use tongs, tweezers, forceps, etc. with a minimum length of 12". Always work with your arms fully extended to reduce the potential radiation to the whole body.

#### To Perform Tests:

1. Dissolve Alconox powder in 10 ml water and lightly moisten the filter paper from envelope #1.



calculation it is shown that the whole body exposure will not exceed 5 milliroentgens. This test can be easily accomplished with Co-60 sources up to 40 mCi and Cesium-137 sources up to 150 mCi. Always use tongs, tweezers, forceps, etc. with a minimum length of 12". Always work with your arms fully extended to reduce the potential radiation to the whole body.

#### To Perform Tests:

1. Dissolve Alconox powder in 10 ml water and lightly moisten the filter paper from envelope #1.
2. Thoroughly wipe all accessible surfaces of the radioactive source.
3. Allow the paper to dry, return it to its envelope and seal closed with tape.
4. Use the paper in envelope #2 to dry the source, place it back into its envelope and seal with tape. The paper in envelope #2 will be counted only if results are positive on sample #1.
5. Send the envelopes to CWM with the form entitled "Leak Test Report," which is in each test kit. Please reply to all questions.

#### B. COTTON TIPPED APPLICATORS

The cotton tipped applicators are for use with gamma emitting sources such as those used in radiography where smearing of the source capsule is impractical because of the potential radiation hazard to the person performing the smear. A smear is taken of the inside surface of the source container, housing, well, etc.

#### CAUTION

1. Gamma sources of high intensity must be handled carefully and quickly especially when out in the open air. A convenient time to make this smear test is obviously when and if the source is being used outside the container.
2. If this is not possible, arrangements must be made for having a shielded area to place the source during the smear test. For a temporary installation the use of lead or steel bricks or concrete blocks is considered acceptable.
3. A high-range survey instrument should be available to perform surveys to assure that the source is in a shielded position while performing the tests.





4. The following table should be used as a guide in establishing a temporary shield.

	Thickness (in.) required to reduce radiation by a factor of 2			Dosage levels in mR/hr per millicurie, at:		
	Lead	Steel	Concrete	1ft.	8ft.	16ft.
Cobalt-60	0.49	0.87	2.7	14.5	0.23	0.06
Cesium-137	0.25	0.68	2.1	3.3	0.05	0.01
Iridium-192	0.19		1.9	5.9	0.09	0.02

5. Care must be taken in choosing the location of a temporary shield to avoid the possibility of excessive radiation levels in floor areas above and below the shield.

#### TO PERFORM TESTS:

1. Remove the source from its container and place it in a shielded area.
2. Dissolve the Alconox in 10 ml of water.
3. Remove swab #1 from its envelope, moisten it with the Alconox, and thoroughly smear the area of the source container that was in most intimate contact with the source capsule.
4. Allow the swab to dry and return it to its envelope without permitting the cotton swab to touch the outside of the envelope. Seal the envelope with tape.
5. Repeat the test with the swab taken from envelope #2. Return it to its envelope and seal with tape. The swab in envelope #2 will be counted only if results are positive on sample #1.
6. Where it is impractical to remove a permanently fixed source from a special container it is acceptable to make the smear on an accessible area adjacent to the source. One example of such an area would be inside a conical beaming port. The source shutter should be kept closed while smearing the area.
7. Send the envelopes to CWM with the form entitled "Leak Test Report", which is included in each test kit. Please reply to all questions.

#### C. MAILING REGULATIONS

The Post Office Department regulations prohibit the shipment of radioactive materials through the mail where the level of radiation at the outside surface of the envelope exceed 0.4 milliroentgens per hour.



It is, therefore necessary that all smears be surveyed with an appropriate radiation detector prior to mailing. Should you find that the radiation level of any smear is in excess of 0.4mR/hr, then surely the contamination on it will be in excess of 0.005 microcuries. The smear may be forwarded to our laboratory for evaluation via rail or air express, but we require prior notification so that we can provide additional shipping instructions.

You are further reminded that in accordance with NRC requirements the results of any contamination tests which reveal the presence of more than 0.005 microcurie must be reported to the NRC within 5 days. The source must be considered to be leaking and should be repaired, decontaminated or disposed of in accordance with NRC regulations. It is also recommended that the general area in which the source is stored or used be immediately surveyed with an appropriate instrument to determine the possible extent of spread of contamination.



5/16/85

TELEPHONE OR VERBAL CONVERSATION RECORD

TIME

1035

☐ A.M.  
☐ P.M.

☐ INCOMING CALL

☒ OUTGOING CALL

☐ VISIT

PERSON CALLING

Thompson

OFFICE/ADDRESS

RJ

PHONE NUMBER

EXTENSION

5303

PERSON CALLED

Lt. Briggs

OFFICE/ADDRESS

U.S. Coast Guard

PHONE NUMBER

EXTENSION

FTS 642-2730

CONVERSATION

SUBJECT

Discussed the following deficiencies

SUMMARY

- 1) Please indicate what training personnel will receive with regards to operation of device
- 2) Who will perform leak tests and evaluate them and at what frequency.
- 3) Please indicate how you will secure device during transportation and when at a job site.
- 4) Please indicate your emergency procedures.
- 5) How will you dispose of gauge if you are finished with device.

REFERRED TO:

ACTION REQUESTED

Lt. Briggs will send as a letter.

☐ ADVISE ME OF ACTION TAKEN.

INITIALS

DATE

ACTION TAKEN

INITIALS

ML16

DATE

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U.S. Department  
of Transportation

United States  
Coast Guard



Commanding Officer  
U.S. Coast Guard  
Research and Development  
Center

Avery Point  
Groton, CT 06340  
Phone:

3900/759000.58

10 MAY 1985

Dr. John Glenn  
U.S. Nuclear Regulatory Commission  
Region 1  
Nuclear Material Section  
631 Park Avenue  
King of Prussia, Pennsylvania 19406

Dear Dr. Glenn:

Subsequent to our letter of 5 April 1985 requesting renewal of our License 06-16731-01, we have decided to procure a piece of equipment which will require an amendment to our license. In order that we can accept delivery of this new device, we request that our license be amended to include Barium 133 in sealed sources.

Specific changes to the license are as follows:

1. Amend Condition 6 to add: Barium 133
2. Amend Condition 7 to add: Amersham BCD-700 Sealed Source
3. Amend Condition 8 to add: Not to exceed 1 milli-curie per source
4. Amend Condition 9 to add: To be used in Campbell Engineering Model K Series Density Gauge for determination of properties at various job sites within Federal Jurisdiction

Obtaining the Campbell density gauge as soon as possible is crucial to an ongoing Coast Guard research project so anything you can do to expedite this request is greatly appreciated.

Sincerely,

R. J. KETCHEL  
Captain, U. S. Coast Guard  
Commanding Officer

~~8567430024~~ 3pp

MAY 14 1985

DATE *5/9/85*  
TIME *1030* ☐ A.M.  
☐ P.M.

TELEPHONE OR VERBAL CONVERSATION RECORD

☐ INCOMING CALL ☒ OUTGOING CALL ☐ VISIT

PERSON CALLING <i>Thompson</i>	OFFICE/ADDRESS <i>RI</i>	PHONE NUMBER	EXTENSION <i>5303</i>
PERSON CALLED <i>Dr. Chih-Wu Su</i>	OFFICE/ADDRESS <i>US DOT US Coast Guard</i>	PHONE NUMBER <i>FTS 642-2708</i>	EXTENSION

CONVERSATION

SUBJECT *5 Deficiencies on Renewal application*

SUMMARY  
*See attached sheet*

REFERRED TO:

ACTION REQUESTED

ACTION TAKEN

☐ ADVISE ME OF ACTION TAKEN.

INITIALS

DATE

INITIALS

DATE

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Serial No. PY614895

Amps W66

- 1) Please indicate ~~the~~ what you ~~are~~ ~~have~~ done with your hydrogen 3 gas chromatograph.
- 2) Please note the Valco Model 140BN Ni-63 detector cell is a generally licensed item which does not require a specific NRC License.
- 3) Please confirm that your gas chromatographs will be maintained in a locked area.
- 4) Please provide specific NRC <sup>Service</sup> license number for Chemical Waste Management, Inc., which permits them to perform your leak tests.
- 5) Please provide your leak test procedures.