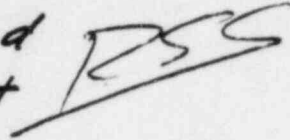


23 August 1968

To: R.S. Cleveland
From: R.G. Gilbert



Subj: Inspector Evaluation:
Radiation Machinery Corp.
Parsippany, N.J.
Lic No. 29-12649-1

The only product of licensee at present is the 400 Ci Cs¹³⁷ irradiator designed for use by educational institutions (High Schools & Colleges).

Licensee staff appears very competent & conscientious in radiation safety matters. No problems were noted during this initial inspection.

Inasmuch as company expects rapid growth in sales of irradiators, not only in educational field, but in medical & industrial fields, and possible inclusion of other types irradiators for marketing, I feel it would be best to schedule reinspection at normal frequency, i.e. August 1970.

Licensee expects to have 5 MCi Co⁶⁰ irradiator, hot cells, and a broad license for new plant under construction in Parsippany-Tray Hills, thus we will have continuing interest in this company.

REGION I, DIVISION OF COMPLIANCE
NEWARK, NEW JERSEY

SPECIAL LIMITED INSPECTION

1. Name and address of licensee: *Radiation Machinery Corp.*
Parsippany, N.J.
2. Date of Inspection: 21 August 1968
3. Type of Inspection: Initial

4. License number(s), docket number(s), number and date of last amendment for each license. Category and Priority of each license:

29-12649-1 with amend. #1 dtd 7/15/68

5. Date of previous inspection: None

6. Is "Company Confidential," or proprietary, or classified information contained in report?

Yes _____ No x

(Specify paragraphs)

7. Scope of inspection:

Review of program which involves manufacture & sale of 400 Ci Cs¹³⁷ irradiators. Main emphasis on radiation safety & degree of assistance & instruction given to customers - mostly high schools.

8. R. G. Gilbert
Inspector

23 August 1968
Date of Report

RSS
Reviewer

12/24/88 et al
Date of Review

Licensee: _____

DETAILS

A. Participants

E. T. O'Sullivan, Exec. V.P., Acting RPO - source of info.

State not informed

B. Scope of Licensee Program

Eight (~400 Ci ^{60}Co) irradiators produced to date.
Four sold, one on loan, three in storage - see also item S.
Sales started in April 1968. Five more units committed for sale.
Two sources at IRL for incorporation into irradiators.
100 sources on order @ ORNL

C. Organization

O'Sullivan reports to Packin, Ramco President. Shortly Jos. Kivel, PhD Nuclear Chemistry, formerly RPO @ Atlantic Research, will become RPO. Kivel will be VP - Technical Ops. Eventually Kivel will have full time RSO on staff. Ramco plans to have 5 MG ^{60}Co irradiator & at least 3 hot cells in new facility

D. Administrative Control

O'Sullivan coordinates ordering sources from ORNL, delivery &

installation of sources into irradiators at IRL, transportation of units to customers or storage, installation at customers facility, & licensing of customers. Installations have been done by

E. Use of Material

2400 Ci ^{60}Co in irradiator. See application 12/18/67, letters of 10/16/67, 12/19/67, 1/17/68 & application of 5/29/68 w/ letter of 6/28/68.

under construction in Parsippany. Also will apply for ~~E~~ broad license and do own source & radioisotope manufacturing.

person listed in memo (confirmed by review of installation records). O'Sullivan supervised four installations; Herold, Karl & Seid did one (Wilkesbarre)

Licensee: _____

F. Facilities

Storage area (in garage) on Parsippany Rd - See attachment to letter dated 1/17/68.

Area noted locked (keys in possession of O'Sullivan & available only to authorized user); inside area posted CRM, units labeled CRM-KQA.

G. Equipment

Other than 3 irradiators survey equipment as noted on application of 5/28/68.

Survey equipment serviced & calibrated by Wm B. Johnson company. Will be done at least quarterly.

H. Radiological Safety Procedures

Written - See application letter 1/17/68, & letter 5/28/68

Safety package incorporating portions of above + discussion of surveys, leak tests, restricted areas, posting, security, & operation of unit given to customer. Biology dept's of high schools recipients of units. Biology teachers so far have or will take 6 wk AEC-NSE course in radiation techniques.

I. Personnel Monitoring and Exposure to External Radiation

No monitoring devices - no (or little) personnel exposures. See also item M.

Landwerk 20R-600R dosimeter listed on application used to check on dose rate within irradiated.

Licensee: _____

J. Exposure of Employees to Concentrations of Radioactive Materials

None

K. Effluents to Unrestricted Areas

None

L. Disposals

None

ORNL shipping cask used to transfer sealed sources from ORNL to IRL.

L.-1 TRANSFERS - See also item (S).

In addition to sales records, O'Sullivan keeps a log showing each sealed source transferred to licensed customer. Five direct sales & one temporary loan to date.

M. Miscellaneous Surveys, Evaluations and Records - ^{{ Results same for}
_{{ For each source transferred.}

For each sealed source received O'Sullivan's log shows date each sealed source received @ IRL from ORNL, ORNL leak test record (< 100 cpm/smear), IRL survey & installation date, & results of leak test (< 0.001 μ Ci using p scint. detector), Ramco smear of irradiation chamber @ installation (no detectable activity monitoring smear with ion chamber), and results of survey at time loaded on company vehicle & installed @ customers facility. Results for each source also noted on company form (see exhibit "A") copy of which given to customer. [continued item (S)]

Licensee: _____

N. License Conditions

No discrepancies noted during review of all condition with O'Sullivan.

O. Posting and Labeling

Storage area post CEM

Irradiators labelled CEM & KQA. - Brass plate has KQA gummed sticker for CEM & Symbol. Irradiator model B, according to O'Sullivan, meets DOT regs as spec 56 container.

Red label on irradiator & placarding of company truck when transporting irradiators to customer.

P. Independent Measurements

{ Using GM GS-2, #5682, calib 8/30/68 NYO
June model 7 #2442 calib 4/24/68 NYO

Survey of one model A & one model B irradiator @ storage facility - June no levels above instrument background (2.05 mR/hr, GM - max 0.4 mR/hr at one spot on back, other surfaces < 0.2 mR, with irradiation chamber in & out.

Q. Operations Observed

Operation of model A & model B units

R. Incidents, Overexposures, Theft or Loss, Equipment Malfunction

None noted or reported

Licensee: _____

S. Other Information or Continuation from Previous Paragraphs

From item (3)

Distribution of nominal $380 \text{ Ci} \pm 5\%$ Cs^{137} irradiators

Sales - Model A: Ridgewood High School - N.J.

Burlington Township High School - N.J.

Newark State College, Union NJ

Parsippany - Troy Hills High School - NJ

Loan - Model B: Coughlin High School, Wilkes Barre Pa

Storage at Parsippany Road facility - (188 Parsippany Rd)

2 model A + 1 model B.

From item (4)

Forms as shown by exhibit 'A' filled out for each source transferred reviewed by inspector. Data same on each. Records showed - strength $380 \pm 5\%$ $\text{Ci} \text{ Cs}^{137}$ - leak test data as in item (4) - after loading of irradiator @ IRL max reading at surface of irradiator (one spot at ^{top} plug back) 2 mr/hr, 0.5 mr/hr @ 2 inches from surface other places - Ramco survey both @ IRL and at installation, using GM, 0.8 mr/hr at back surface, 0.5 mr/hr at 2" and background other places; using ion ch - background or ≈ 0.5 mr/hr any place at surface. Ramco also checks out license survey meter & survey techniques at installation.

C'Sullivan stated also suggest to customer that they get license authorization to wipe test irradiator.

Record of survey of storage area noted to have survey each time ~~and~~ an irradiator placed in storage.

Licensee: Radiation Machinery Corp (Ramco)

Summary

Ramco produces & sells 400 Ci Co^{137} irradiators to high schools and colleges (plan to include industrial & medical facilities in future) ORNL fabricates sealed sources, doubly encapsulated, & ships to IRL who assembles sources into irradiator. Ramco picks up irradiator @ IRL and delivers to customers or puts in storage

Noncompliance and Safety Items

None noted

at Parsippany. Ramco assists customers in preparation for licensing & development of rad safety program & gives detailed instruction re use of instrument.

Unusual Occurrences

None reported or noted

Status of Previously Reported Noncompliance or Safety Items

None - initial inspection

Management Interview

M. Packin, Pres, & E T O'Sullivan, Exec VP, informed satisfactory program and problems or deficiencies noted. Also informed good program re instruction & assistance given to customers relating to rad safety, security, & use of irradiator.

Sample

RADIATION MACHINERY CORP.
SEALED SOURCE RECORD & SURVEY

Model No. _____ Serial No. _____

Sealed Source Designation: _____

Radioisotope and amount: _____

Source fabricated at: _____

Date Shipped _____ from _____ to _____

Initial smear test of sealed source at _____

Result: _____

7 day leak test performed at _____ date _____

Gammator loaded at _____ date _____

Radiation levels: mr/hr at surface: Max. _____ Avg. _____

mr/hr at 2 inches: Max. _____ Avg. _____

Company possession date _____

Transported from _____ to _____ date _____

from _____ to _____ date _____

Transferred to _____ License No. _____

Method of Transport: _____ date _____

Survey Data:

Detectable radiation where unit is to be placed: _____

Radiation level with unit installed _____ date _____

Leakage Test: Date Results Ins't. Performed by

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

EXHIBIT "A"