

April 29, 1974

U.S. Atomic Energy Commission  
Directorate of Regulatory Operations, Region I  
631 Park Avenue  
King of Prussia, Pennsylvania 19406

Attention: Mr. Paul R. Nelson, Chief  
Radiological and Environmental Protection Branch

Dear Mr. Nelson:

On April 25, 1974, five polonium-210 sources at the Valley Forge Space Center were found to be contaminated by leak tests. A report has been filed with the Director of Licensing in accordance with condition 13E of license #37-02006-05. A copy of that report is attached.

Sincerely,



R. G. Oesterling  
Health Physicist

/jc

enclosure

E-14

# GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY . . . . . VALLEY FORGE SPACE CENTER  
(MAIL: P. O. BOX 8555, PHILADELPHIA, PENNSYLVANIA 19101), Phone (215) 962-2000

*Smiley*  
*2025*  
SPACE DIVISION

*Watt*  
*File File*

April 26, 1974

Director of Licensing  
U.S. Atomic Energy Commission  
Washington, D.C. 20545

Attn: Mr. Robert E. Brinkman, Materials Branch

Dear Mr. Brinkman:

This report of contaminated polonium -210 sources is submitted as required by condition 13E of license #37-02006-05. The leak test date was April 25, 1974.

1. Sources: Po210, five each at five millicuries as microspheres in an epoxy matrix, manufactured by the 3M Company as Model MDL 204, serial numbers 120683, 120718, 120719, 120720 and 120721.

2. Test Method: Wipe test on source face with alcohol moistened filter paper.

3. Test Results:

SN 120683	0.038 microcuries
SN 120718	0.0038 microcuries
SN 120719	0.0055 microcuries
SN 120720	0.041 microcuries
SN 120721	0.02 microcuries

SN 120719 and SN 120720 were in their original holders. The screen was removed for these tests.

4. Extent of Contamination: No contamination detectable with an Eberline PAC-4G was found on any personnel, on any work surfaces or on any wipes from these surfaces. Surveys made with the PAC-4G on equipment used in the disassembly indicated the following:

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- a. Fingertip of one glove 10000 cpm
- b. Other gloves max 400 cpm
- c. Saw and knifeblade max 3000 cpm
- d. Original source holders with source removed:

SN 120683	2.5 x 10 <sup>5</sup> cpm
SN 120718	6000 cpm
SN 120721	2 x 10 <sup>4</sup> cpm

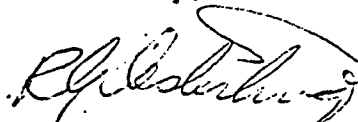
Wipe samples of the experimental apparatus and source holders yielded the following with a proportional counter:

- a. Experimental apparatus with SN 120718 mounted 0.025 nanocuries
- b. Experimental apparatus with SN 120721 mounted 0.068 nanocuries
- c. Plastic box containing SN 120683 0.42 nanocuries
- d. Exterior of SN 120719 holder 0.13 nanocuries
- e. Exterior of SN 120720 holder 0.051 nanocuries

- 5. Use of Time of Test: initial mounting on experimental apparatus.
- 6. Suspected Cause of Source Failure: Radiation damage in microspheres and epoxy matrix, allowing migration of free polonium. The test results are consistent with those reported by Robertson and Randle in Health Physics, March, 1974, for similarly constructed sources.
- 7. Corrective Action Taken: Mylar film of about 1.5 mg/cm<sup>2</sup> thickness is being expoxied to the faces of the sources. This is expected to contain leakage from the sources for the short term. Biweekly leak tests will be made to determine the efficacy of the containment.

A copy of this report is being submitted to the Region I Office, Directorate of Regulatory Operations. A copy of the cover letter is attached. Please contact me if you have any questions.

Sincerely,



R. G. Oesterling  
Health Physicist