

**SINCLAIR RESEARCH LABORATORIES, INC.**

400 EAST SIBLEY BOULEVARD  
HARVEY, ILLINOIS

E. J. MARTIN  
VICE PRESIDENT AND GENERAL MANAGER

December 17, 1956

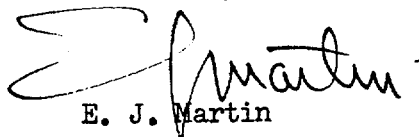
U. S. Atomic Energy Commission  
P. O. Box E  
Oak Ridge, Tennessee

Attention: Isotopes Extension  
Division of Civilian Application

Gentlemen:

Attached are two copies of Form AEC-313 for renewal of  
license No. 38866 authorizing irradiation of cutting tool tips.

Yours very truly,

  
E. J. Martin

*a hml* AIS:vrf  
Attachments (2)

3255

*C/20*

APPLICATION FOR RADIOISOTOPE PROCUREMENT

37467

FOLLOW ATTACHED INSTRUCTIONS

LEAVE BLANK

TO: U. S. ATOMIC ENERGY COMMISSION, POST OFFICE BOX E, OAK RIDGE, TENNESSEE; ATTENTION: ISOTOPES DIVISION

1. NAME AND ADDRESS OF APPLICANT (Institution, Firm, etc. Follow Instruction No. 2A)	2. DEPARTMENT TO USE ISOTOPE (Follow Instruction No. 2B)
Sinclair Research Laboratories, Inc. 400 East Sibley Boulevard, Harvey, Illinois	Engine Laboratory

3. NAME AND ADDRESS OF INDIVIDUAL USER (Follow Instruction No. 3A)

W. G. Ainsley  
Sinclair Research Laboratories, Inc. 400 E. Sibley Blvd.  
Harvey, Ill.

4. EXPERIENCE OF THE USER (Follow Instruction No. 3B)

Thirty years experience in testing of petroleum products by engines, lathes, milling machines, etc., and is qualified to use new test procedure. Graduate Engineer in charge of our Engine Laboratories.

RADIOISOTOPE REQUESTED (Follow Instruction No. 4)

5. ISOTOPE (Element and mass number)	6. CHEMICAL FORM	7. QUANTITY (Millicuries or irradiated units)	8. OTHER SPECIFICATIONS
Iron 59	Major component, in automobile engine piston ring	Ten days at $3 \times 10^{12}$ n/cm <sup>2</sup> /sec	

9. ITEM NO. (If any) IN U. S. AEC CATALOG	10. NAME AND ADDRESS OF SUPPLIER, IF KNOWN
	AEC - Argonne National Laboratory

STATEMENT OF USE (Follow Instruction No. 5)

11. STATE PROPOSED USE OF RADIOMATERIAL AND GENERAL PLAN OF INVESTIGATION

The radioactive piston rings are to be used to investigate the rate of wear and accumulated wear of these rings in an automobile engine as a function of lubricating oil composition and engine operating conditions. As the rings become worn the wear particles are suspended in the oil. The oil is continuously taken from the engine crankcase through a cooler into a shielded chamber where the gamma rays are detected by a scintillation crystal and preamplifier connected to a ratemeter and chart recorder. Provision is also made for manual counting at very low wear rates.

12. WILL THE RADIOISOTOPE BE USED IN HUMAN BEINGS? (Follow Instruction No. 6A)

CIRCLE YOUR ANSWER YES  NO

13. A. HUMAN DOSAGE (In millicuries per patient)	B. NUMBER OF DOSES (Per patient)	C. NUMBER AND TYPE OF PATIENTS	D. COMPOUND ADMINISTERED	E. SAMPLE TO BE TAKEN FOR MEASUREMENT

14. APPROVAL OF THE USER'S LOCAL ISOTOPE COMMITTEE (Follow Instruction No. 6B)

"THE LOCAL ISOTOPE COMMITTEE APPROVES THE HUMAN USE AS INDICATED IN ITEMS 11-13."

(Signature of Chairman, Local Isotope Committee)

15. WILL THE RADIOISOTOPE BE USED IN LOWER ANIMALS?

CIRCLE YOUR ANSWER YES  NO

16. IS A COMPLETED FORM AEC-313A A PART OF THIS APPLICATION? (Follow Instruction No. 7)

CIRCLE YOUR ANSWER YES  NO

17. MAY THE ISOTOPES DIVISION RELEASE GENERAL INFORMATION REGARDING MATERIAL USED AND PURPOSE? (If your answer is "No," please state your reason here)

CIRCLE YOUR ANSWER YES  NO

READ THE TERMS AND CONDITIONS ON THE BACK OF THIS SHEET AND SIGN THE CERTIFICATE THAT FOLLOWS—AN UNSIGNED APPLICATION CANNOT BE CONSIDERED

## TERMS AND CONDITIONS

In consideration of the issuance of an authorization from the Commission to enable the applicant to procure or obtain the radioisotopes or irradiation service requested hereon, the applicant agrees that:

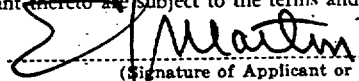
1. Radioisotopes purchased or acquired from the Commission or a distributor are shipped f. o. b. the laboratory, plant, facility, or Commission office handling the transaction, at prices and service fees as fixed by the Commission, and title to said materials, if same are not already owned by the applicant, shall pass to the applicant when the materials are delivered to the carrier. When shipment of the materials requires the use of returnable Government-owned containers, title to such containers shall remain in the Government and a deposit to insure return of the containers will be made if required. The applicant will keep the containers in good condition, will not use them for any materials other than the materials shipped therein, and will return them to point of shipment, transportation prepaid, within 21 days of date of shipment.
2. Neither the Government, the Commission, nor any distributor will be responsible for:
  - (a) any damage to, destruction to, loss of, or changes in physical or chemical properties of materials of any kind accepted for a service irradiation, either as a result of, or in the process of, the irradiation or while said materials are in the possession of the Commission or a distributor;
  - (b) any injury to persons or other living things or for damage to property caused by handling, shipment, use (including use based on any statement of quality or quantity), storage, transfer, disposal, or reshipment of, or other act or failure to act in connection with any materials purchased or acquired from the Commission or a distributor, or procured from any source upon the Commission's approval, it being expressly agreed that, as between the Commission, the supplying distributor, and the applicant, the applicant assumes complete responsibility and liability for any such injury or damage occurring: Provided, however, That if such injury or damage is caused solely by the negligent packing of the Commission or a distributor this assumption of liability shall not apply.
3. Neither the Government, the Commission, nor any distributor makes any warranty or other representation that (a) materials accepted for a service irradiation will not be destroyed, damaged, or otherwise altered in physical or chemical properties in the process of irradiation, and (b) radioisotopes (1) will not result in injury or damage when used for the purposes approved by the Commission, (2) will accomplish the results for which they are requested and approved by the Commission, (3) are safe for any other use, or (4) are of a particular quality or quantity. When procuring radioisotopes from the Commission or a distributor the applicant agrees to report promptly whether the amount received represents the amount paid for, in order that discrepancies may be adjusted.
4. Neither the Government, the Commission, nor any distributor shall be responsible, irrespective of cause, for the failure of the Commission, and distributor, or other transferor to (a) deliver radioisotopes at specified times, or (b) deliver radioisotopes of specified quality.
5. When materials supplied for a service irradiation are:
  - (a) from an applicant not authorized to possess or use radioisotopes, the Commission or the distributor shall have the right to retain possession and control of the irradiated materials throughout the period of measurable activity of such materials, and unless otherwise stated in the request for service irradiation, may dispose of such materials in accordance with the usual Commission or distributor disposal procedures for radioactive materials;
  - (b) to be tested or analyzed and retained by the Commission or a distributor, such materials may, unless otherwise stated in the request for service irradiation, be disposed of in accordance with the usual Commission or distributor disposal procedures for radioactive materials.
6. It is expressly agreed that if any irradiated materials covered by (a) or (b) above must be retained by the Commission or a distributor in order to protect health and minimize other hazards to life or property, the applicant will pay all storage and maintenance charges connected therewith, and if any irradiated materials belonging to the applicant are disposed of under the provisions of this paragraph, the applicant shall have no claim for the value or replacement of said materials.
6. The Commission shall have the right to publish and use any information or knowledge acquired as a result of the irradiation of materials furnished by the applicant, including results of tests and analyses made for the applicant in connection with any such irradiated materials.
7. The right to revoke or cancel, with or without cause, arrangements for or agreements for the purchase or acquisition of any radioisotopes from a distributor, including arrangements or agreements for service irradiations, is reserved to the Commission. In the event the Commission revokes or cancels any arrangement or agreement for a service irradiation, the Government, the Commission, and the distributor shall be discharged of all obligations thereunder by return to the applicant of an amount of nonirradiated material of like kind, quality, and quantity as the material accepted for irradiation.
8. Title to and possession of all radioisotopes purchased or acquired from the Commission or from a distributor, or from any source on the authorization or approval of the Commission, remain subject to the Commission's statutory *right to recall*. Title to any materials recalled by the Commission shall vest in the Commission with the exercise of this right, and the Commission may enter and take possession of said materials any time after notice is given that the materials are being recalled: Provided, That if requested, the applicant, at his expense, will make shipment of the recalled materials to a destination designated by the Commission.
9. The applicant agrees to indemnify the Government, the Commission, their officers, agents, contractors, distributors, servants, and employees against liability, including costs and expenses incurred, for infringement of any Letters Patent occurring in the course of any service irradiation, test, or analysis performed for the applicant by the Commission or its distributors, or occurring in the utilization by the applicant of any radioisotopes or irradiated materials.
10. The applicant will furnish to the Isotopes Division six copies of each article published on the results of his investigations using radioisotopes or irradiation services, or will upon request furnish to the Isotopes Division a report of the results of his investigations.
11. Any radioisotopes received as a consequence of this application will be dealt with in accordance with all instructions, recommendations, or standards issued by the Commission for the safe use, handling, or disposal of radioactive materials.
12. All purchase orders and agreements for procuring radioisotopes are subject to the terms and conditions hereof and any contrary conditions of sale or transfer contained in such purchase orders or agreements will not apply.

### CERTIFICATE

The applicant and any official executing this application in behalf of the applicant certify that the information stated herein is true and correct, that this application is made under and in conformity with Code of Federal Regulations, Title 10, Atomic Energy, Part 30, Radioisotope Distribution, and agree that this application and any materials procured pursuant thereto are subject to the terms and conditions on this page.

November 9, 1955

(Date)



(Signature of Applicant or Certifying Official)

Vice President

(Title)

### WARNING

18 U. S. C., Sec. 1001; act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

APPLICATION FOR RADIOISOTOPE PROCUREMENT

STATEMENT OF FACILITIES FOR RADIATION MEASUREMENT AND HEALTH SAFETY MONITORING

Radioisotopes may be distributed only to applicants equipped to observe safety standards for the protection of health. This part of form AEC-313 must be completed in triplicate and left attached to your first application. It may be detached from subsequent applications provided, there is no change in availability of the items listed.

18. NAME AND ADDRESS OF APPLICANT (Institution, Firm, etc.) <b>Sinclair Research Laboratories, Inc. 400 East Sibley Boulevard, Harvey, Ill.</b>	19. DATE <b>November 9, 1955</b>
20. NAME AND TITLE OF USER (Same as item 3 above) <b>W. G. Ainsley, Division Director</b>	21. DEPARTMENT <b>Engine Laboratories</b>

LIST OF RADIATION INSTRUMENTS AVAILABLE

22. KIND OF INSTRUMENT	23. MAKE AND SERIAL NO.	24. SENSITIVITY RANGE (Include window thickness in mg/cm <sup>2</sup> )	25. USE (Health monitoring or measurement)
Portable alpha, beta gamma survey meter	Nuclear Instrument & Chemical Co. Model 261Y Serial No. 157	Ranges 0.2, 2 and 20 mr/hr. Window 1.4 mg/cm <sup>2</sup> plus cap for gamma rays only.	Monitoring
"Cutie Pie" Radiation Survey Meter	Tracerlab - Model SULH, Serial 1099,	25, 250, 2500 mr/hr full scale. Accuracy +10% of full scale at all ranges. Window 2-3 mg/cm <sup>2</sup> plus shield for gamma rays only.	Monitoring
Laboratory Monitor	Tracerlab Model SU-3C Serial No. 10058	200, 2000, 20,000 CPM full scale. 5 CPM minimum rate which can be read on meter. Accuracy +5% of full scale on all ranges. Window 3-4 mg/cm <sup>2</sup> .	Monitoring
Pocket Dosimeters Dosimeter Charger	Tracerlab - Model K-112 - On Order Tracerlab - Model K-135 - On Order	Full Scale 200 mr Accuracy + 5% of full scale	Monitoring
Film Badges Scintillation Counter with 1-3/4" x 2" long sodium iodide crystal	On Order Tracerlab P-20 Scintillation Counter On Order		Measurement
Autoscaler	Tracerlab SC-51 On Order		Measurement
Precision Ratemeter	Tracerlab SC-34 On Order		Measurement

26. HOW ARE INSTRUMENTS CALIBRATED?  
**By use of standard sources.**

27. HOW FREQUENTLY ARE INSTRUMENTS CALIBRATED?  
**Monthly**

HEALTH PROTECTION AND MONITORING

28. DESCRIBE PROCEDURES PROPOSED FOR MONITORING AND HEALTH PROTECTION (Particularly those special features pertinent to your work)

On arrival at this laboratory transfer of rings to engine is accomplished by use of long handled tongs and long handled ring expanders while monitored with "Cutie Pie" radiation survey meter. Rings will be stored in a Company owned shipping and storage container which provides 2-1/2" of lead shielding. All personnel handling rings will wear pocket dosimeters and film badges. The engine area will be roped off and the area clearly marked with standard radiation hazard signs. The floor and area surrounding the engine will be periodically monitored with a beta-gamma survey meter. All personnel handling rings will have appropriate initial and periodic physical examinations.

29. NAME AND TITLE OF PERSON TO WHOM RESPONSIBILITY FOR HEALTH PROTECTION WILL BE DELEGATED

R. H. King - Assistant Personnel Director and Safety Supervisor

30. EXPERIENCE OF ABOVE PERSON (Item 29)

Four years experience as Personnel Supervisor following medical and safety functions. Graduate chemist.

MISCELLANEOUS EQUIPMENT FOR HEALTH PROTECTION

31. LIST AND DESCRIBE BRIEFLY (Radiation, shielding, respirators, ventilated hoods, remote handling equipment, etc.)

Long handled tongs for handling rings.  
Long handled ring expanders for installing rings on engine.  
Ring storage container - 2-1/2" of lead shielding, can contain three rings.  
Rubber gloves and aprons for operations involving transfer of oil.