MANUFACTURERS OF
LUMINOUS DIALS
NEUTRON SOURCES
RADIATION SOURCES
RADIOACTIVE SPECIALTIES

NAME PLATES
ETCHED AND LITHOGRAPHED

"UNDARK"
LUMINOUS MATERIALS

"IONOTRON"
STATIC ELIMINATORS

"RADELIN"
X-RAY SCREENS
TELEVISION PHOSPHORS

"LACKON" PANELS

TELEPHONE WORTH 2-1600

UNITED STATES RADIUM CORPORATION

535 PEARL STREET, NEW YORK 7, N.Y.

PLANTS AND LABO[illegible]
BLOOMSBUR[illegible] PA
BERNARDSVI[illegible] N
WHIPPANY [illegible] J.

CABLE ADD[illegible]
RADELIN-NE[illegible]

September 25, 1953

Mr. Stephen P. Cobb, Jr.
Technical Assistant to Director
Isotopes Division
U. S. Atomic Energy Commission
Oak Ridge, Tenn.

Your Ref: OI:SPC

Dear Mr. Cobb:

Thanks very much for your letter of September 22nd.

The regulations which you propose for the distribution of sealed sources on an experimental basis are entirely in line with our thinking and we feel sure there will be no difficulty in complying therewith.

The laboratory is attempting to prepare the application you request and to provide, as far as possible, the data which you require. You will realize, of course, that it may be a little difficult to provide specific information regarding all the possible types of sources which might be required under this program.

At the present time, we are thinking only in terms of sources containing isotope-activated phosphors and a few foil sources which would consist essentially of either mounted or unmounted foils of a type similar to our radium sources. The isotope-activated light sources would all be of a construction similar to that of our self-luminous markers supplied to the Government and they would consist essentially of a plastic or a plastic-metal case of adequate thickness to reduce the level of radiation due to primary radiation to virtually zero. Such sources would be free of surface contamination to the extent that they would meet or be better than the requirements for sealed beta and gamma sources which you discussed with us.

Secondary radiation due to brehmstrahlung would not exceed about 5 mr per hour on the surface and, in over 99% of the cases, would be less than 2 mr per hour. Designs would also be such that disassembly would be difficult and could be accomplished only by deliberate action contrary to the instructions which would be supplied with the sources. Markings on the sources would indicate the type and amount of isotope, radiation level, and the wording "Dispose of by Burial". Naturally, the customer would not be expected to dispose of the source, since this would be entirely on a loan basis, and return to our laboratories would be required.

Mr. Stephen P. Cobb, Jr.

Leakage tests and contamination tests would be performed prior to shipment and in few, if any, cases would it be necessary to have the customer run a repeat test, since the loan period would normally be a matte of not over one or two weeks.

The foil radiation sources would be supplied in containers which would provide little or no radiation level at the surface and which could be uncovered for test purposes by the customer, in accordance with directions which we would supply. In general, such sources would be of low radiati level, unless the loan were made to a laboratory properly equipped to handle sources containing greater than a few micrograms of activity per source.

In other instances, where it would be our opinion that the customer woul be adequately able to handle an unprotected source, we would require that his equipment be sent to us for installation of the source and that the complete unit be returned to him for such tests to determine applicability of the radiation source.

In general, this covers the procedure which we had in mind, and I can assure you that our experience in this field has provided us with adequa background to determine which customer could be relied upon to abide by our regulations and properly handle the sources.

The application which the laboratory will file will doubtless contain th above information, also in a more or less general form, since there migh be slight variations in various types of sources.

Thanks also for the information on production of Actinium. The laborato is investigating the literature for further information regarding separa o of Actinium from radium and, as soon as we have analyzed the program, we will get in touch with you and discuss a service irradiation. We woul appreciate information regarding the minimum amount of radium which could be satisfactorily irradiated for a preliminary experimental run.

We are having some difficulty in getting the tests you requested on polo ium foils. This is due to a number of causes, one of which is that we h e no active orders for foil for the moment and our next large scale delive es are scheduled to start in November. There is also a possibility that we will receive an order from another source in the meantime and, if so, we will be able to take foils from the standard production run.

Our major difficulty, however, is that we are in difficulty at the momen with impurities in the last shipment of polonium received from our curre supplier. We are attempting to get a new lot which is more adaptable fo foil preparation. If we are not successful, it may be necessary to pro e material from Oak Ridge for the experimental work. We have made a small run of foil with the present material and have run wipe tests on four 1" square sections containing 500 microcuries per square inch, each.

Mr. Stephen P. Cobb, Jr.

These four sections, incidentally, have four cut edges and are representative of about the worst conditions which can be encountered. Wipe tests on the one square inch sections, just as the material leaves the rolls and prior to any attempt to clean or decontaminate, shows .008 to .009 microcuries on the first wipe test and .0037 to .004 microcuries on a repeat wipe test. After cleaning either with radiac wash or dilute nitric acid, the first wipe test shows .002 microcuries and a repeat wipe test .001 to .0015 microcuries.

These foils are presently sealed in a container, such as your proposed regulations describe, and repeat wipe tests will be run in about a week or ten days.

We hope to repeat this operation as soon as we acquire some high grade and high purity polonium. We believe, however, that these preliminary tests are indicative of one of the worst situations which can be encountered and may be the basis for establishing upper limits.

As soon as we have additional information, we will get in touch with you.

Very truly yours,

UNITED STATES RADIUM CORPORATION

C. W. Wallhausen
Vice President

CWW:es