

Office Memorandum • UNITED STATES GOVERNMENT

TO : T. H. Johnson, Director, Division of Research, Washington

DATE: September 30, 1954

FROM : Paul C. Aebersold, Director, Isotopes Division, Oak Ridge *PCA*

SUBJECT: COMMENTS ON IMPROVEMENT OF ISOTOPE DISTRIBUTION TO SOUTH AMERICA

OI:PCA

Your office has called our attention to AEC 751/7 "Preliminary Observations Concerning a Pan-American Program in Peacetime Applications of Atomic Energy" and asked for comments on the recommendations, particularly on paragraph 17a. Having returned from South America on August 30, a full report on my trip is not yet completed but will be submitted later. This memorandum will comment only on isotope distribution to South America.

As I understand the recommendation in paragraph 17a., the proposal would establish two centers of isotope distribution in South America to be operated by Pan American Sanitary Bureau with the advice and assistance of this Division. Bulk shipments of isotopes would be delivered to these centers for redistribution. Isotope users in South America would purchase the isotopes, but the AEC might assist through payment of shipping charges. Suggested centers are Lima, Peru, on the Pacific coast and Rio de Janeiro, Brazil, on the Atlantic side.

In commenting on this proposal, I should first like to say that during my trip I learned through talking to a large number of isotope users in South America, that the greatest single deterrent to these users is in obtaining U. S. dollars. Nearly all countries have an unfavorable trade balance with the U. S. and suffer a dollar shortage. If the trade balance is better with respect to sterling economy countries, it may be more economical to buy isotopes from Harwell. However, because of much greater U. S. foreign aid to Europe than Latin America, nearly all Latin American countries also find themselves in an unfavorable sterling trade balance. Consequently, there is often no great advantage in purchasing radio-isotopes from Harwell. In the final analysis, any need for foreign money exchange deters isotope usage in these countries.

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In consideration of recommendations in AEC 751/7, the following points concerned with isotope distribution to South America should be taken into account:

1. In some countries there are internal customs taxes and import broker's fees which may amount to a large fraction of the total cost to the user of the isotope.
2. Air freight shipping charges are the same to most points in South America.
3. Shipping distances between many of the larger cities in South America are extremely large. For short lived materials direct shipment from the U. S. supplier is essential; long-lived materials do not need a redistribution center.
4. Redistribution centers are already in operation in Sao Paulo, Brazil and Buenos Aires, Argentina, with another one planned for Rio de Janeiro, Brazil.

Up to the present, South American shipments have usually been small, and the cost of the isotope in a shipment is not large. Shipping charges can not be neglected, but they are usually not the most significant expense. Appreciable costs often arise from each country's own customs taxes and handling expenses even without an import duty charge. For example, the air shipment costs to Sao Paulo, Brazil, for 20 millicuries of P 32 or I 131 are about eight dollars. Although arrangements have been made so that there is no import duty on isotopes in Brazil, there are customs taxes and handling fees charged by the import broker. The total cost of the shipment (exclusive of the isotope) would amount to approximately \$25.

Most shipments to South America are sent via air freight and shipping charges by this means of transportation are the same to most points in South America. While it is true that air shipping charges require dollar exchange and to some extent deter wider use of radioisotopes in South America, it seems unlikely that establishment of two redistribution centers as suggested would greatly improve the present situation. Other factors such as decay losses would appear to be more important than the shipping charges.

Examples of shipping charges via air to South America are as follows: 20 mc of either P 32 or I 131 can be shipped via air freight for \$8, regardless of the country in South America.

(The minimum charge of \$8 applies to weights up to 27 pounds.) Air express rates vary with the weight of shipment and the shipping distance. However, air express serves only Cuba of the Latin American countries. If a shipment is made via air express, consigned to Brazil, for example, it would go to Cuba, then be transshipped via air freight from Cuba to Brazil. Cost of such shipment would be \$12.63 for a three pound container and \$16.83 for a twenty-three pound container.

Another factor is the great distance between major cities in South America (Lima to Santiago, 1500 miles). Because of this, radioisotopes of short half-lives, that is less than one week, generally need to be shipped directly to the institution where the material is to be used. It would not be possible to stockpile such isotopes as Gold 198, Sodium 24, or Potassium 42; redistribution and re-shipment would eliminate possible savings made in initial bulk shipments. Radioisotopes of half-lives greater than two weeks are seldom shipped on an emergency basis. Direct shipment to the user can be arranged in a manner which would result in little more, if any, expense than that from a redistribution point. Isotopes in this category include such items, useful in biology and medicine, as P 32, Fe 59, C 14, Co 60.

It should also be noted that redistribution centers already exist in two places in South America and a third is to be established. In Sao Paulo, Brazil, the Laboratorio de Isotopos, Universidad Sao Paulo, under the direction of Dr. Tede Eston, acts as a dispensing center for users in the Sao Paulo region and in some cases has supplied materials to users elsewhere in Brazil. In Buenos Aires, Argentina, the Commission Nacional de Energia Atomica has established a system for redistribution from their excellent radiochemical laboratories to other points in Argentina. The Instituto Oswaldo Curz in Rio de Janeiro, Brazil, has been designated by the National Science Foundation of Brazil to be an isotope dispensing center for Rio de Janeiro. It would appear that these centers would be sufficient, at present, for isotope users in Brazil and Argentina. Users in Caracas, Venezuela, also on the East coast, can obtain materials more rapidly through direct shipment from the U. S. than from the larger cities farther south.

On the west coast of South America, the only users of isotopes in any quantity are in Santiago, Chile and Lima, Peru. Chile has received a total of 89 shipments from September 1947 through August 1954, while Peru has received only 17 shipments during the same period. In any case, neither country receives more than a

few shipments per month. The group in Santiago, Chile, have arranged to meet their needs in combined shipments and appear satisfied with the shipping service. Properly routed shipments arrive in Santiago from 24 to 48 hours after leaving Oak Ridge.

It appears to me that important savings to South American users could be made through:

1. Largest possible reduction of decay losses, including addition of extra material by U. S. suppliers.
2. Prepayment of shipping charges.

Decay losses can be minimized by careful routing and handling of air shipments. For example, Abbott Laboratories, Oak Ridge, write their own bill of lading and specify exact flights all the way to destination and have an excellent record of making deliveries in South America. Oak Ridge National Laboratory, which has in the past left details of shipment up to the official representative of each country or to designated shipping agents, has not shown as good results in making rapid deliveries. Shipments are sometimes delayed a day or two at transshipping points, particularly at Miami between continental and international airlines. Steps are now being taken to improve delivery arrangements of foreign shipments from Oak Ridge National Laboratory.

It is the custom of Harwell to compensate for decay losses in long distance shipments. Harwell gives a "baker's dozen," an extra amount at time of shipment, to attempt to deliver to the customer the quantity ordered. Shipments from Oak Ridge National Laboratory to all points, whether in the United States or abroad, are charged for activity at time of delivery to the shipping agent. Because international shipments cover extremely long distances and may encounter transshipment delays, it would seem reasonable to add extra material for decay loss in such shipments even though this practice would not be desirable for domestic shipments.

Inasmuch as the basic difficulty is shortage of money, valuable assistance would be to reduce the dollar cost whenever possible. This might be done by setting up a fund to help defray some of the charges incurred here in the United States, such as shipping costs. This fund could be administered by the United Nations or the Pan American Sanitary Bureau.

I should also like to add the following general comments concerning our international isotope program. We have prepared a staff

paper on international distribution of isotopes to consider establishment of procedures for handling export of byproduct materials which will satisfy Section 82 of the Atomic Energy Act of 1954. (This paper will be forwarded to Washington shortly.) The recommendations of this staff paper are too long to be included here, but they would permit distribution to other countries either through an "agreement for cooperation" with respect to isotope procurement or a modification of the present international distribution procedures, which would not necessarily require an official representative, but would permit direct applications from individuals or institutions within other countries, as well as direct shipping arrangements.

Recently the recommendations in AEC 231/24 were approved by the Commission. The undertakings appearing on each application have been modified, so that reports of isotope utilization will need to be submitted only upon request of the AEC, rather than annually as heretofore. The previous reporting requirement has been troublesome to all foreign users, including those in South America. In fact, this requirement acted as a deterrent to redistribution of radioisotopes by groups within Latin America. The secondary distributor felt obliged to request annual reports from all the groups receiving the secondary shipments and incorporate them into the yearly report. This meant a great deal of extra record keeping and paper work for the secondary distributor. For example, it was one of the greatest worries of the excellent radioisotope center at the University of Sao Paulo. Now that reporting is no longer required, it will be much easier to encourage sharing of shipments or redistribution by a single laboratory in each major city.

It is recommended that:

1. The AEC encourage and assist in the establishment of radioisotope redistribution centers at each of the larger cities of Latin America having more than one group of radioisotope users. This can be done by simplifying and making more direct the arrangements for processing applications and making shipments. The elimination of reporting requirements, recently approved by the Commission, will also greatly reduce the problem of group sharing of shipments and redistribution centers.
2. The AEC work out with the larger shippers of radioisotopes to South America, namely Oak Ridge National Laboratory and Abbott Laboratories, arrangements for better routing of shipments, to eliminate as much as possible, delays at transshipment points.