

News and views

RADIOACTIVE ISOTOPES

AEC ENLARGES ITS EXPORT PROGRAM

Since 1947, the U. S. Atomic Energy Commission has been conducting an export program whereby a limited variety of radioisotopes produced in the United States has been made available to foreign users for the specified purposes of scientific and medical research and medical therapy. Any foreign user has had the opportunity to purchase the available isotopes through a representative in the United States who has been designated by the user's government to handle all matters connected with isotope shipments. In order to buy isotopes produced here, however, foreign users must agree to furnish the AEC (upon request or at intervals not exceeding one year) with results of progress obtained with the use of isotopes obtained from the United States. They must also agree "to facilitate exchange of information and visits, relative to work with radioisotopes, between qualified scientists, without regard to nationality, in accordance with normal scientific practice."

Response to the program by scientists abroad, according to the Commission, has been highly enthusiastic during the past four years, and the work accomplished with the exported isotopes has contributed importantly to the welfare of people throughout the world. More than one thousand isotope shipments have been made to foreign nations, with the largest users being Australia, Belgium, Denmark, Sweden, and the United Kingdom. A total of thirty-four countries have completed arrangements to receive isotope shipments, but to date neither the Soviet Union nor any of its satellite nations have expressed interest in obtaining isotopes under the conditions laid down by the AEC.

The encouraging results of the program have led the AEC to expand this international service considerably. In mid-July, it was announced that the number of U. S.-produced radioisotopes available to buyers in foreign countries had been increased from the original list of twenty-six different isotopes to a new total of ninety-nine. These include all isotopes distributed without restrictions to users within the United States. Only one radioisotope distributed here on a limited basis (tritium) is not available for export.

For the first time, also, the Commission has announced that isotopes are being made available to foreign users for industrial research and application as well as for the scientific and medical purposes previously specified. Among the more useful of the newly

available isotopes are cesium-137, yttrium-91, selenium-75, and tantalum-182, all of which have valuable applications in industrial research; chromium-51, nickel-59 and 63, and tungsten-185, which are useful in metallurgical research; and rubidium-86, which is a satisfactory substitute for the shorter-lived sodium-24 and potassium-42 in agricultural research.

It will be recalled that during the stormy sessions of the Joint Congressional Committee on Atomic Energy, which held numerous hearings on AEC operations in 1949, certain criticisms of the Commission's radioisotope export program were voiced by Senator Bourke B. Hickenlooper (R. Iowa), whose charges of "incredible mismanagement" of the AEC led to the investigation, and by the then Atomic Energy Commissioner Lewis L. Strauss, who had dissented from his colleagues when they first voted for foreign isotope shipments. Senator Hickenlooper expressed the opinion that the Atomic Energy Act did not give authority for the distribution of isotopes outside of the jurisdictional limits of the United States, and was especially concerned by the fact that one millicurie of iron-59 (contained in 4.7 cc of iron chloride in solution) had been sent to the Norwegian Military Establishment for studies on the diffusion of iron in steel at high temperatures. He suggested that such a shipment could assist the receiving country to develop jet engines or industrial appliances and therefore represented a "potential imperilment to our national security."

Commissioner Strauss, in taking the position that "radioactive isotopes would be increasingly useful in providing information not only for atomic energy research but also in a vast field of industrial and military applications not involved in production of the atomic bomb itself," informed the Joint Committee that he regarded section 10(a) of the Atomic Energy Act as prohibiting foreign isotope shipments.

Section 10(a) provides, "That until Congress declares by joint resolution that effective and enforceable international safeguards against the use of atomic energy for destructive purposes have been established, there shall be no exchange of information with other nations with respect to the use of atomic energy for industrial purposes."

The formal report of the Joint Committee, published in October 1949, summarized the discussion which took place during the hearings in an attempt to resolve the questions raised by Commissioner Strauss and Senator Hickenlooper. Largely a question of semantics, the issue finally became one of whether the word "isotopes" might be substituted for either "atomic energy" or "information" in the meaning of the act. The act itself defines the term "atomic energy" as meaning "all forms of energy released in the course of or as a result of nuclear fission or nuclear transformation", and Senator Hickenlooper, keeping in mind the well established equivalence of energy and matter, advanced the argument that isotopes are actually "forms of energy released in the course of or as a result of nuclear fission." J. R. Oppenheimer, one of the several expert witnesses

called during the debate, was asked what the act's definition of "atomic energy" meant to him as a scientist. Dr. Oppenheimer remarked that coal, oil, people, and numerous other things are atomic energy by this definition because all result from nuclear fission and nuclear transformation; he added, however, "If I were to define 'atomic energy' for the purposes of this act, I would exclude radioactive isotopes from the definition." Any possibility of substituting the word "isotopes" for the word "information" in section 10(a) was dismissed by the Committee's report, and the argument was finally closed by a majority opinion that the AEC isotope export program, which restricted the beneficiaries' use of the materials to pure science, biology, and medicine, was not affected by the section in the law dealing with "industrial purposes."

In announcing its most recent action in expanding the export program to include more varieties of isotopes and to permit their use for industrial research and applications, the Atomic Energy Commission has issued the following statement:

"Our principal reason for enlarging the radioisotope export program at this time is the very high degree of success with which the program has been operated in the past and the benefits which have been derived from the widespread use of isotopes throughout the world. Isotopes produced in the United States have been enthusiastically received by the scientists of foreign lands and the work accomplished with them is contributing importantly to the welfare of all peoples.

"There is nothing secret or evil about radioisotopes in the forms in which they are sold in this country and abroad. While their utilization cannot significantly advance the atomic energy programs of nations, they can contribute, and are contributing, significantly to advancements in basic science, medicine, agriculture and industry. As of today, isotopes constitute the single most important contribution of atomic energy to peacetime welfare.

"Enlargement of our isotope export program is, we feel, in keeping with the foreign policy of the United States, which calls for aid to foreign nations in peaceful development, and, even in the absence of international control of atomic energy, constitutes a field in which international cooperation can be increased."

The new isotope program also permits the Oak Ridge National Laboratory, which produces most U. S. radioisotopes, to provide special irradiation services to scientists of other nations. Under the program, foreign scientists may send special materials to Oak Ridge to be made radioactive by exposure to the intense neutron radiation in the nuclear reactor. The number of foreign scientists who are familiar with isotope research techniques has been increased considerably in recent years, partly through attendance by scientists of other nations at the Isotope School of the Oak Ridge Institute of Nuclear Studies.

Procedures which foreign buyers must use in ordering isotopes from the U. S., as well as information on the procedures U. S. buyers must use in ordering iso-

topes from Canada and the United Kingdom, are described in the 1951 Isotopes Catalog, available from the AEC Isotopes Division, Export-Import Branch, Oak Ridge, Tennessee.

SIXTH UNESCO CONFERENCE

FURTHER DISCUSSIONS ON INTERNATIONAL LABS

Unesco's program in the natural sciences, which has as its primary aims the developing of international scientific cooperation, the encouraging of socially beneficial scientific research, and the disseminating of scientific information, was considered at some length this year by delegates to the Sixth General Conference of Unesco in Paris during the period from June 18th to July 11th. According to the U. S. delegation's informal report of the conference, the proposed international computation center is to be given first priority among the international laboratory projects which are now under consideration by Unesco. Establishment of the computation center had been suggested prior to last year's resolution in Florence that Unesco help in sponsoring a European nuclear physics laboratory; it was therefore felt that work on the computation center should take precedence over the nuclear center. It was recommended that an immediate subvention of \$20,000 be given to help in establishing the computation center and that a loan be given by Unesco if sufficient assurance of financial support for the laboratory is obtained from the interested governments.

As proposed, the computation center would provide an international computing service, together with certain facilities for research; it would also serve to train applied mathematicians. A relatively small governing board is anticipated on which Unesco would be represented to insure maintaining the international character of the center. Although no site has yet been selected, a meeting will be held in November with representatives of interested governments and agencies of the United Nations; it is expected that the site may then be chosen and that progress will be made in gaining immediate and continuing financial support for the center. Each of three nations (Italy, the Netherlands, and Switzerland) had previously indicated its willingness to make a loan of approximately \$75,000 if the laboratory were to be established within its borders. After becoming firmly established, it is not contemplated that the center will receive further financial support from Unesco.

Considerable interest was expressed at the Paris Conference in the proposed European nuclear physics laboratory. Unesco's natural sciences working party, in discussing the possibilities for the laboratory, recommended that problems connected with its establishment be considered primarily as the responsibility of the interested countries, including Sweden, Denmark, Belgium, France, Italy, and several others. Estimates of the cost of such a laboratory have been placed in the neighborhood of twenty or twenty-five million dollars, an expenditure which has been felt to be prohibitive for any single nation among those interested. It will be