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THE USE OF THE AGENCY'S TWO MOBILE RADIOISOTOPE LABORATORIES DURING THE PERIOD 1958-1965

Memorandum by the Director General

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ABBREVIATIONS USED

Agency	International Atomic Energy Agency
Germany, F.R.	Federal Republic of Germany
Korea, R.	Republic of Korea
UK	United Kingdom of Great Britain and Northern Ireland
USA	United States of America

THE USE OF THE AGENCY'S TWO MOBILE RADIOISOTOPE LABORATORIES DURING THE PERIOD 1958-1965

Introduction

1. Two mobile laboratories, specially equipped for training courses on the use of radioisotopes, were donated by the Government of the United States of America to the Agency in 1958. The first one was exhibited in Geneva at the Second International Conference on the Peaceful Uses of Atomic Energy in September of that year, and was subsequently taken over by the Agency; the second laboratory was taken over at Oak Ridge National Laboratory in 1959 and sent directly to Mexico.

2. The laboratories are built into motor coaches. Each consists mainly of a chemical laboratory and a radiation counting room, with three working areas accommodating six people working simultaneously in pairs.

3. Administrative and financial provisions to govern the use of the two laboratories were approved by the Board of Governors in 1959 and 1960. In accordance with those provisions, the Governments of the countries in which the laboratories were used undertook to pay the cost of moving a laboratory to and within their own country, half of the subsistence allowance for the experts engaged and the Agency staff accompanying it and the cost of day-to-day maintenance. Experience showed, however, that requesting Governments found it very difficult to bear the full cost of moving a laboratory and changes were accordingly made in the provisions, first in 1960 and again in 1964, as a result of which the Agency bore part of the cost of transporting the laboratories to and from the areas where they were required.

Use for training

4. The two laboratories have so far been requested and used by 16 countries, and approximately 1500 technicians and students have completed training courses held in 48 towns. [1]

5. Before Mobile Unit No. 1 was put into use, it was tested in Austria, with a view to determining the nature and scope of the training which could be given in the laboratories; it was then sent to Greece, Yugoslavia and the Federal Republic of Germany before being shipped to Asia and the Far East for a tour of the Republic of Korea, China, the Philippines, Indonesia, Viet-Nam and Singapore. It was stored in Singapore during 1964 and was sent to Ghana at the beginning of 1965. Altogether this unit was used in 26 different towns and is now at the Laboratory at Seibersdorf, where it is used for training and research in neutron activation analysis of medical and biological samples.

6. Mobile Unit No. 2 has visited 22 different towns in Mexico, Argentina, Uruguay, Brazil and Bolivia. It was stored in Rio de Janeiro during 1964 and 1965 and is now to be used in the project for the eradication of the Mediterranean fruit fly in Central America under the Special Fund Sector of the United Nations Development Programme.

7. The subject-matter and period of the training courses were varied to meet local requirements. The lectures and experiments in the courses dealt with the application of the essential techniques used in many fields, including basic counting techniques and chemical manipulations. As examples, the following may be cited:

(a) Lectures:

Characterization of radiation;
Nuclear structure;

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[1] For details, see the Annex.

Modes of decay;
Interaction of radiation with matter;
Detection of radiation;
Instrumentation for radiation detectors;
Standardization and assay of radioactive materials;
Principles of health physics;
Radiochemical separation methods;
Biological applications and problems; and
Analytical application of radioisotopes.

(b) Laboratory experiments:

Determination of operating conditions of various counters;
Counting problems: Self-absorption, scattering, statistics;
Preparation of radioactive samples for counting;
Beta absorptions: Range and feather analysis;
Gamma-ray spectra and scattering effects;
Assay by beta- and gamma-counting;
Ion exchange;
Co-precipitation;
Isotope dilution;
Phosphorus distribution in rats; and
Activation analysis.

8. The mobile laboratories provided many countries with the first opportunity to organize training courses in provincial towns. Thus students and technicians in developing Member States, who would otherwise not have had access to laboratory facilities, could be introduced to basic techniques and experiments related to the use of radioisotopes in medicine, agriculture and industry.

Use for demonstration purposes and dissemination of information

9. The laboratories were used not only for training courses but also for demonstration purposes to disseminate information on new radioisotope techniques to scientists and the general public.

10. In Yugoslavia, Mobile Unit No. 1 made a three-day tour of five towns to demonstrate to graduate engineers and technicians the effectiveness of radioisotope applications. In Brazil, Mobile Unit No. 2 was used for demonstrating the application of radioisotopes in medicine. [2] In some other places, the laboratories were utilized to arouse public interest in the use of radioisotope techniques on a wider scale. In Saigon, for instance, about 50 scientific films were shown to 3000 fellows. In Mexico, Mobile Unit No. 2 was displayed at a national exhibition designed "to obtain from the State Department the help which a national programme of education in nuclear energy demands".

The Agency's total expenditure on the two mobile laboratories

11. The Agency's total expenditure on the two mobile laboratories during the eight years 1958-1965 has amounted to US $123 900. The annual expenditure and number of trainees are set out below:

[2] The opportunity was also taken to use radioisotope techniques in a systematic study of endemic goitre.

Years	Expenditure (US dollars)	Number of trainees
1958-1960	$ 38 500	590
1961	$ 23 800	405
1962	$ 20 200	270
1963	$ 16 400	145
1964	$ 3 700 a/	-
1965	$ 21 300	90
TOTAL	$123 900	1 500

a/ Cost of storage and maintenance.

The total expenditure is 0.7% of the expenditure on the technical assistance provided by the Agency from its own resources during the same period, which amounted to US $16 633 000.

ANNEX

Activities of the two mobile radioisotope laboratories during the period 1958-1965

Mobile Unit No. 1[a/]

Year	Area	Country and town	Duration (months)	Experts (where provided)	Number of participants in training courses
1958	Europe	Austria: Vienna, Innsbruck	3½	None	85
1959		Greece: Athens	1	A. G. Maddock (UK)	25
		Yugoslavia: Skopje, Svetozarevo, Tuzla, Sisak, Maribor	1	None	100
		Germany, F. R.: Essen	1	None	20
	TOTALS:	4 countries, 9 towns	6½		230
1960	Asia	Korea, R.: Seoul, Kwangju, Taegu, Pusan	5	H. M. Clark (USA)	175
1961		China: Hsin-chu	5	C. H. Liu (USA)	120
		Philippines: Manila, Cebu City, Los Banos, Cavite City, Quezon City	3	R. T. Overman (USA)	30
		Indonesia: Djakarta, Bandung	4	A. H. Dahl (USA)	85
1962		Viet-Nam: Saigon	6	None	100
1963		Singapore: Singapore	5	E. Nussbaum (USA)	80
	TOTALS:	6 countries, 14 towns	28		590
1965	Africa	Ghana: Accra, Kumasi, Cape Coast	4	K. Buchtela (Austria)	90
	TOTALS:	1 country, 3 towns	4		90
1958-1965	GRAND TOTALS:	11 countries, 26 towns	38½		910

a/ Custodian: J. Häupe (Secretariat).

Mobile Unit No. 2 b/

Year	Area	Country and town	Duration (months)	Experts (where provided)	Number of participants in training courses
1960	Latin America	Mexico: Monterrey, San Luis Potosi, Guanajuato, León, Guadalajara, Mexico City, Puebla, Vera Cruz	3	None	140
		Argentina: Mendoza, Cordoba, Salta	4½	None	35
1961		Uruguay: Montevideo	1	8 lecturers from Argentina	10
1962		Brazil: Rio de Janeiro, Sao Paulo, San Carlos, Santos, Riverao Preto, Brasilia, Coiania	9	None	340
1963		Bolivia: La Paz, Cochabamba, Santa Cruz	3	J. Flegenheimer, M.C. Palcos de Enquin (Argentina)	65
	TOTALS:	5 countries, 22 towns	20½		590

b/ Custodian: J. Obermayer (Secretariat).