SAVING MONEY AND INCREASING EFFICIENCY WITH ISOTOPES

Since 1959 the Agency has been actively engaged in promoting the industrial application of radioisotopes and is the only international organisation concerning itself with this method of obtaining the benefits of the peaceful uses of atomic energy.

Experience in advanced countries has proved that radioisotopes have provided modern industry with a large variety of ways of improving efficiency and saving money. Developing countries, including those with rudimentary but growing industries, are being encouraged to accelerate their progress through the technical and economic advantages of the techniques.

Promotion can best be achieved by creating, in each country with the requisite industrial potential, one or more groups ready to advise and give active assistance to growing industry. Such a group could be formed in an industrial research institute, an existing Atomic Energy organisation, or in a large industry. It would equally well be an independent body. The Agency has set out to give all possible assistance to member States by supporting existing groups and founding and consolidating new groups. Decisions on the formation of groups are aided by advice either by correspondence or by

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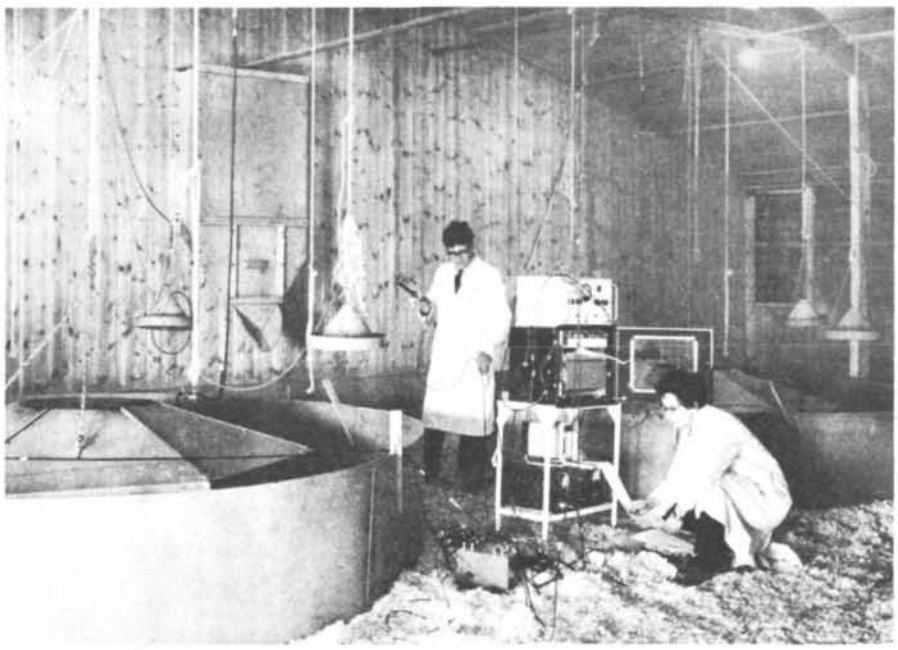
In a turkey rearing house radioactive gas helps to show whether ventilation is efficient. (Photo : UKAEA)



special missions able to study projects and problems on the spot. Further support is available through technical assistance and advisory, field, laboratory and information services.

Technical assistance can take various forms. Experts can be sent to advise on or assist in general ways such as the use of instruments and tracers or on a specific subject such as gamma radiography. Necessary equipment and supplies may also be provided. During the last six years 9 experts have helped in 8 countries and equipment worth $76000 has been provided. Another expert is about to make a visit to advise on gamma radiography.

The total of fellowships so far awarded is 60, as a result of which scientists and engineers have been able to receive training in all aspects outside their own countries. Scientific visits of shorter duration can be arranged to enable specialists from industrially developing countries to visit laboratories engaged in work of special interest to them.

Regional projects include assistance in special projects, local seminars or training courses, or the provision of advisers. As the programme moves on from the more general spreading of the gospel to specific aspects such activities become more valuable. In 1967-68, for example, plans are being made for such advisers to work in Latin America, the Middle East and the Far East equipped with instruments for demonstrations of gauging possibilities

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Radioactive isotopes produced in a Philippines reactor, here being prepared for use behind protective lead walls, have been used in detecting water-pipe leaks.

and tracer investigations. Advance assessments will ensure that such assistance will be of practical worth. In November a regional training course for twenty scientists and engineers is being held in Mexico City as a cooperative effort with the Government of Mexico for the benefit of Latin American countries. It will be both theoretical and practical, full use will be made of existing facilities and a large number of factory demonstrations will be arranged.

Another form of technical assistance is a study tour, taking a small group from developing countries to other countries to show them routine applications under factory conditions, developing techniques and instrument manufacture. In September and October this year specialists from 16 countries are being sponsored by the Agency for a tour of USSR, the United Kingdom, France and Czechoslovakia. Accompanied and briefed by IAEA staff members, they will thus have the opportunity of seeing a variety of routine industrial applications in actual use.

In the basic task of making prospective users aware of possibilities and informing them which uses are best suited to particular problems the radioisotope groups are the key. Assistance for them is provided by the collection and dissemination of information, advice on all aspects and practical help for particular investigations.

Problems of national importance such as the development of mineral resources or the study of pollution are the subject of research contracts. With laboratory facilities soon to be available these should be supplemented by short-term research and development mainly directed at adapting developed techniques to different conditions, and to standardization. These facilities may also be used by trainees from developing countries or by established scientists to carry out research on their own national problems.

The scope of the important programme of information services is apparent even in a brief summary. Books and films are collected and made available to scientists; scientific works are prepared, published and distributed; personal contacts between scientists are promoted by scientific meetings. In 1959 such gatherings discussed large radiation sources in industry (Warsaw) and radioactivation analysis (Vienna). In 1960 at Copenhagen the theme was radioisotopes in the physical sciences and industry. Production and use of short-lived radioisotopes were discussed in Vienna, 1962 and the industrial use of large radiation sources in Salzburg, 1963. They have been followed by radioisotope economics, Vienna 1964; radiochemical methods of analysis, Salzburg 1964; and radioisotope instruments in industry and geophysics, Warsaw 1965. In November a complementary symposium to the last of these is being held in Prague. At such meetings review papers are prepared on invitation to cover the topics, and recent developments or improvements in existing techniques are dealt with in submitted papers. The proceedings are published and have a wide distribution.

Smaller panels and discussion groups are convened to discuss or give advice on special topics, four having been held in the last year. Since they consist of the world's leading specialists the advice of these groups on courses of action for the Agency to follow is of the utmost value. One of the

results was a discussion in detail of the use of radioisotopes in the development of mineral resources (Cracow 1965). Earlier this year a group of consultants defined terms relating to neutron soil moisture gauges. Subsequent meetings in agriculture and hydrology have endorsed these definitions, and attempts are being made to have them widely adopted. A more recent meeting on bibliographies agreed on the need for newer methods of searching literature and may well result in the evolution of a system which will save much effort in many countries. It recommended that each Member State should provide regular information on articles for collation and processing on a computer for rapid distribution. Thousands of scientists who have to spend much valuable time searching literature may thus find themselves with much more time for their real research jobs. Other meetings this year will aim at (a) producing a booklet to serve as a reference for workers with radioisotope tracers and (b) ascertaining areas and matters for which international agreement and cooperation appears desirable or essential, and to indicate where IAEA action or assistance could be of use. Industrial applications of tracers were discussed in Helsinki during the summer, and another group in Vienna studied radioisotope power sources.

In 1964 an IAEA survey showed that net world savings through the use of radioisotope techniques could be estimated at $300-400 million per annum and that there were high cost-benefit ratios. Such calculations, added to the proven effects on efficiency, give the reason for the Agency's continued efforts to increase knowledge.