

Other projects at Whiteshell include work on radiation-field measurement techniques in confined spaces (such as inside reactor cores), investigation into fundamental biological mechanisms and the effect of radiation (especially low-dose exposure) on them, and materials research -- particularly oriented toward fibre-reinforced ceramics.

Radioisotopes made in the Chalk River reactors are marketed through Commercial Products for use in medical applications for diagnosis, therapy and research. Radioactive tracers are also used significantly in agricultural research by a number of groups throughout Canada.

The Commercial Products group, well established as a world leader in the design of cancer-therapy equipment, introduced a new cobalt-60 therapy machine, known as the Brachytron. This instrument can remotely locate up to three small cobalt-60 sources in body cavities for internal radiation therapy and represents a great advance over the existing treatment techniques using manually positioned external sources.

Under a contract with the Task Force on Oil Pollution, measurements of the trace elements in oil samples from known sources are being made. It is hoped that this could lead to the setting up of a file of distinctive features, enabling identification of oil-pollution sources. Commercial Products has also introduced a trace-element analysis service for government and industry. Employing neutron-activation analysis techniques, the service can identify elements and their quantities in submitted samples. This service has special application in the determination, for example, of various contaminants in food sources and human tissue.

The transportation of radioactive materials is subject to specific regulations, and many developments have been made over the years to ensure that these can be met.

The advent of the Nuclear Weapons Non-Proliferation Treaty and the safeguards against fissile-material diversion, inspected by the International Atomic Energy Agency, has led to special developments of instruments and procedures.

Despite the increasing load of development work, a high quality of active research has been maintained, as has collaboration with other laboratories in universities and research institutes in Canada and abroad.

Relations with Other Organizations

A strong feature of the Canadian organization for atomic energy is that the regulatory body -- the Atomic Energy Control Board (AECB) -- is separate from the chief executive agency (AECL). This does not, however, preclude close working relations. The President of AECL is, *ex officio*, a member of the Control Board and AECL staff are members of several AECB advisory committees.