

Accordingly, our efforts were directed to the measurement of this radioactive element. Because strontium-90 is chemically similar to calcium, it was expected that it would enter the body in much the same way as calcium. Nutritional figures show that the main source of calcium in the average Canadian diet is dairy products. For this reason, and because of its ready availability, milk was chosen as the initial medium for measurement.

As you may know, cesium-137 -- another component of fallout -- is also of concern from the health viewpoint. Whereas strontium-90 is related to possible effects on exposed persons, cesium-137 is related to possible effects on future generations. While our programme to date has concentrated on the measurement of strontium-90, we are actively planning the development of suitable methods for adding cesium-137 determinations to our current studies.

In addition, we are engaged in setting up a nationwide network for sampling air, rainfall and soil. The air sampling programme, which will be carried out on a daily twenty-four hour basis, will give us a measurement of the fallout concentration in air at ground level. Monthly rainfall samples will be analyzed for strontium-90 and cesium-137. This will provide information about the rate of fallout and will enable us to estimate the reproductive tissue dose from fallout for the whole population. Annual soil samples will be analyzed for strontium-90 and cesium-137, and these results will be used as a cross-check on the rainfall data as well as to further our understanding of the up-take of fallout by various plants.

A complete picture of environmental radiation exposure requires that we also make measurements of the radiation levels from natural sources. By natural sources is meant cosmic rays, radioactivity in the soil and building materials, and radioactivity normally present in the body. Taken together, these natural sources form a background or baseline of radiation to which mankind has always been exposed. To obtain a proper perspective, exposures from other sources must be compared with this baseline.

Such comparisons have been made. For example, the recent Report of the United Nations Scientific Committee on the Effects of Atomic Radiation contains the following estimated "genetically significant" doses computed from world-wide averages on the basis of a thirty-year period:

-- from natural sources: a projected dose of 3 rem;

-- from man-made sources other than fallout: a projected dose of between .5 and 5 rem;

-- from radioactive fallout: a projected dose of .01 rem.