

The National Defence Research Institute runs a network for continuous sampling of radioactivity in ground level air and in precipitation in Sweden and performs high altitude air sampling by means of aircraft from the Royal Swedish Air Force.

The present report describes the revised surveillance program in effect since January 1 1976, discusses the preparation, measuring and analysis procedures and gives the results of most measurements made on samples collected between mid-year 1975 and mid-year 1977. This includes results and discussions on four-week samples of ground level air and deposition collected at seven locations in Sweden and weekly samples of ground level air collected at Kiruna, Grindsjön (near Stockholm) and Ljungbyhed.

All high-altitude samples collected during the two years have been analysed and reported on, even from times when no fresh activity was detected. The period covers three atmospheric nuclear explosion tests performed by The People's Republic of China, a low-yield test on January 23 1976, a medium range yield test on September 26 1976 and a high-yield test on November 17 1976.

These three tests are discussed in terms of such factors as the atmospheric behaviour of the debris cloud, fractionation and particle properties of the debris and of neutron activation products detected. One strong sample collected nine days after the November 17 1976 thermonuclear explosion was measured extensively during more than a year and was used to construct a mass-yield curve which is compared with mass-yield curves for different monoenergetic neutrons incident on ²³⁸U.

On some occasions activities were detected that did not derive from any known nuclear explosions test. This is discussed in the last chapter, parts of which have been published elsewhere but which is included here to give a full account of the two years covered by this report.