

## RADIATION PROTECTION

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In the year 2004, the AVF cyclotron, the ring cyclotron and the experimental facilities ran satisfactorily without any serious trouble. The contamination levels of the cyclotron vaults and the experimental rooms are kept well below the legal limit. Notable increase of the radiation level in the vicinity of the cyclotron buildings has not been observed.

A new beam course at the ring cyclotron vault and new beam dump system at the east experimental hall for the ultra cold neutron generation are set up and operation of these courses are approved by the Nuclear Safety Commission of Ministry of Education (MEXT).

### Routine area monitoring

Continuous monitoring has been done for neutron and gamma-ray radiation levels at several points inside and outside of the cyclotron building using  $^3\text{He}$  counters, proportional chambers and TLDs. Outside the building, no increase of radiation level, which is correlated to operation of the accelerators, have been observed.

Monthly integrated radiation dose at the boundary of RCNP site are shown in Fig. 1.

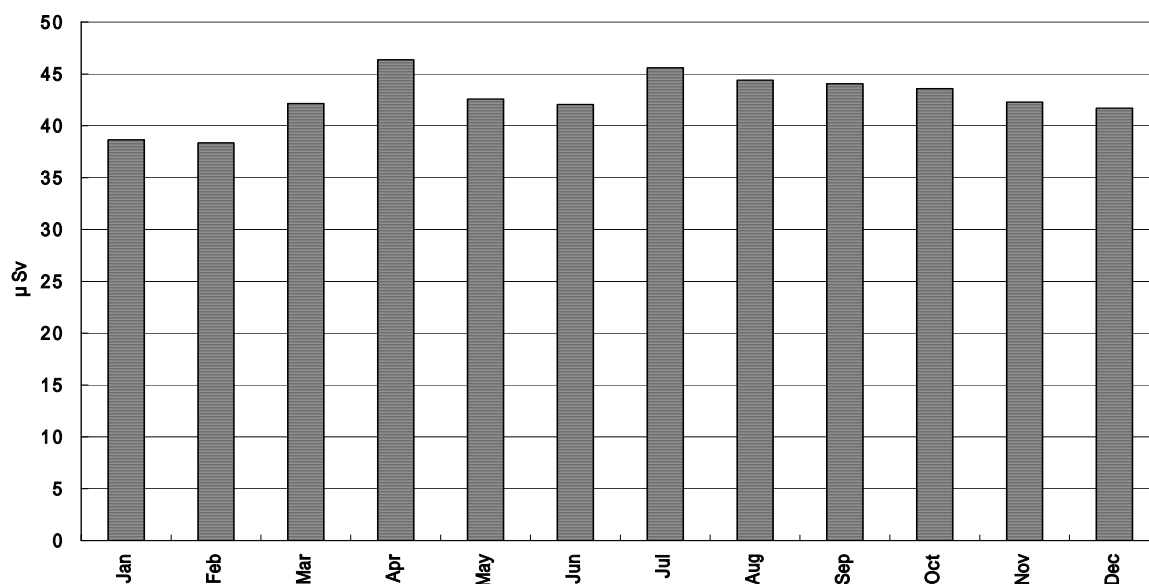


Fig.1. Monthly integrated total dose measured by the neutron and the gamma area monitors at the east boundary of RCNP site.

No detectable radiation levels were observed from the cyclotron facilities. No prominent gamma radiation levels were observed outside the cyclotron facilities.

### Routine personal dose monitoring

Personal dose monitoring has been made using a luxel badge (detection limit 0.1mSv) and a solid state pocket chamber (detection limit 0.001mSv). When one works at high radiation environment, a pocket chamber is used together with a luxel badge. During this year, 4 persons are found being exposed from the monitoring. Results of personal dose monitoring by luxel badge are shown in Figs.

2 and 3. The AVF cyclotron operation started at 1975 and operation of the ring cyclotron started at 1991.

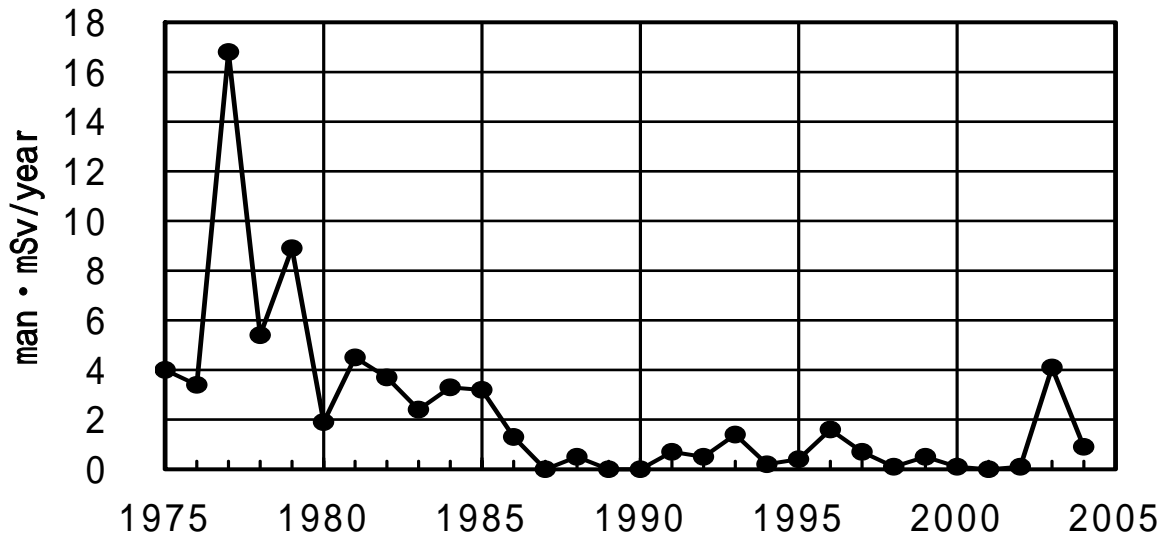


Fig.2. Annual radiation exposure for RCNP and SAS (Sumijyu Accelerator Service Ltd.) people. Sum for all of people

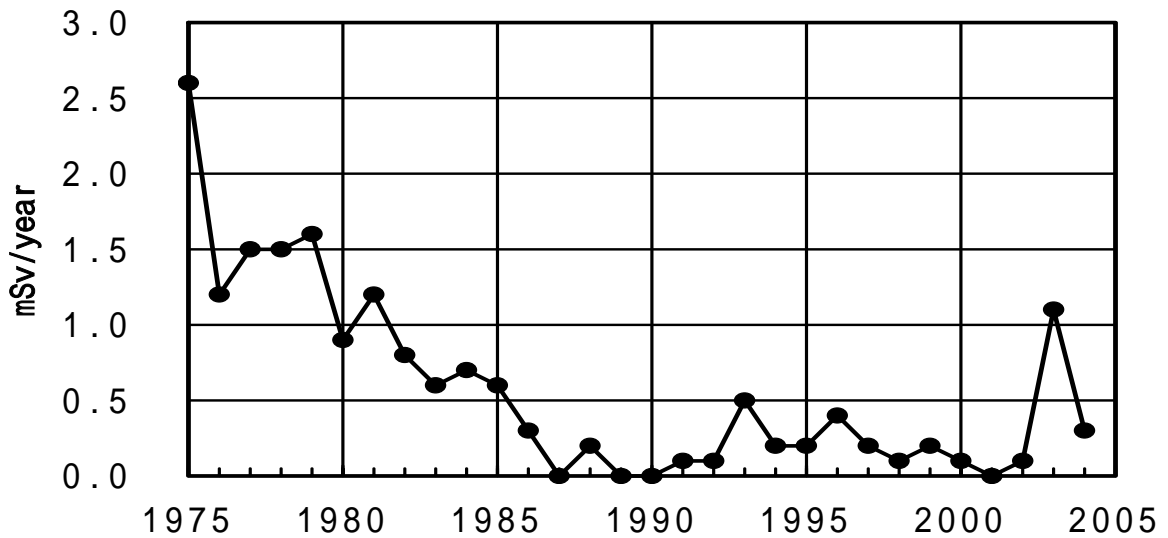


Fig.3. Annual radiation exposure for RCNP and SAS people. Dose for a person who suffered maximum exposure in each year.