RADIATION PROTECTION

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In the fiscal year 2001, 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.

The card control gate system for the access control of radiation controlled area was replaced.

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}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 neutron dose at locations nP1, nP2 and nP3 are shown in Fig. 1. Locations of these monitors are shown in elsewhere.[1] Some neutron sky-shine effect from the adjacent D-T neutron facility of the Faculty of Engineering is observed at nP1. No detectable radiation levels were observed from the cyclotron facilities.

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

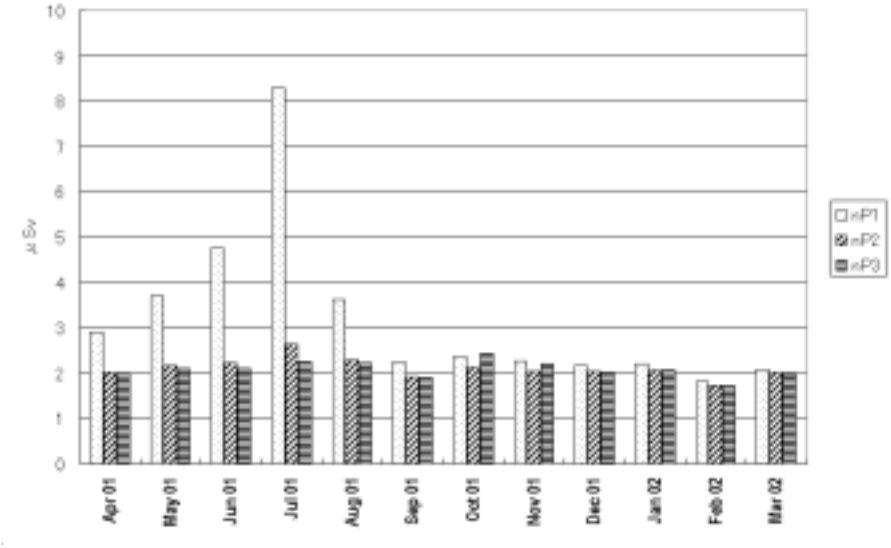

Fig.1. Monthly integrated neutron dose measured by neutron area monitors.

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, the pocket chamber is used together with the luxel badge. Results of personal dose are shown in Figs. 2 and 3. During the fiscal year, no person is found being exposed from the monitoring 0.1mSv and above. The AVF cyclotron operation started at 1975 and operation of the ring cyclotron started at 1991.

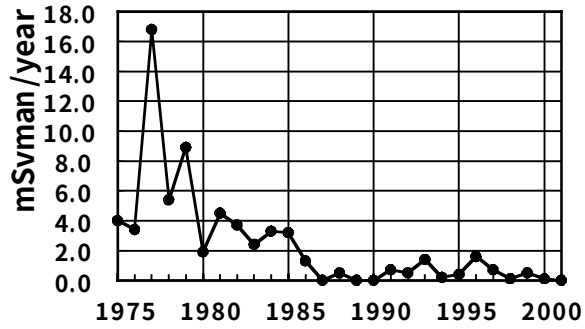

Fig.2. Annual radiation exposure for RCNP and SAS (Sumijyu Accelerator Service Ltd.) people. Sum for all of people.

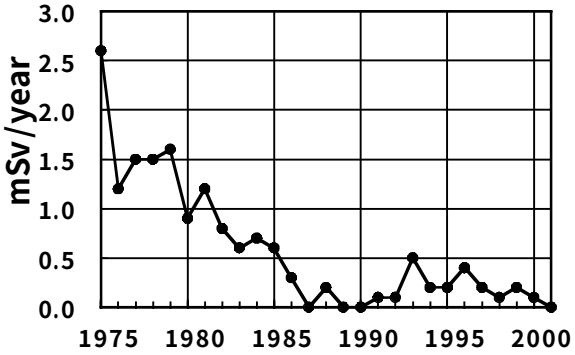

Fig.3. Annual radiation exposure for RCNP and SAS people. Dose for a person who suffered the maximum exposure in each year.

Update of the access control system for radiation controlled area

The access control system for radiation controlled area [2] was replaced. For the new card control system, remote coupling IC cards (HICC) are adopted instead of bar code cards.

Total numbers and individual names of persons who stay in the controlled area are able to be monitored by the intranet of RCNP.

Fig.4 Card reader and the access door for the controlled area.

References

[1] T. Saito, A. Shimizu, K. Tominaga, S. Okamoto, T. Noro and K. Tamura, RCNP Annual Report 1993 p. 211
[2] T. Noro, K. Tominaga, T. Saito, R. Maruyama, N. Matsuoka and K. Hosono, RCNP Annual Report 1990 p. 257