

Radiation Protection and Management

著者	Yuki H., Abe S., Ohtomo K., Watabe H., Nakae H.
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VIII. 2. Radiation Protection and Management

Yuki H.¹, Abe S.¹, Ohtomo K.¹, Watabe H.¹, and Nakae H.²

¹Cyclotron and Radioisotope Center, Tohoku University

²Japan Environment Research Co., Ltd.

(1) Overview

During the fiscal year of 2016 and 2017, research and education in the center were conducted as active as usual.

(2) Unsealed radionuclides used in CYRIC

The species and amounts of the four most used unsealed radionuclides during the fiscal year of 2016 and 2017 are listed in Table 1. The table includes the isotopes produced by the cyclotron as well as those purchased from the Japan Radioisotope Association or taken over from other radioisotope institutes.

(3) Radiation exposure dose of individual worker

The exposure doses of the workers in CYRIC during 2016 and 2017 are given in Table 2. The doses were sufficiently lower than the legal dose limits.

(4) Radiation monitoring of the workplace

Radiation dose rates inside and outside of the controlled areas in CYRIC were monitored periodically and occasionally when needed. They were generally below the legal dose limits although there are several “hot spots” in mSv/hr range like slits or beam stopper of the 930 cyclotron and so on. Surface contamination levels of the floors inside the controlled areas were also measured with a smear method and a survey meter method. They were under the legal regulation levels.

(5) Wastes management

The radioactive wastes were delivered to the Japan Radioisotope Association in the

fiscal year of 2016 and 2017.

The concentration of radioisotopes in the air released from the stack after filtration was monitored with stack gas monitors. The values of concentration were well below the legal regulation levels. The radioactive water was stocked in the tanks at least for 3 days and then released to the sewerage after confirming that the concentration was lower than the legal regulation levels.

Table 1. The four most used unsealed radioisotopes used in CYRIC during the fiscal year of 2016 and 2017.

	2016	2017
C-11	639.02 GBq	396.54 GBq
O-15	9.1887 GBq	5.7750 GBq
F-18	1.5421 TBq	1.5734 TBq
P-32	1.1193 GBq	1.8759 GBq

Table 2. Occupational radiation exposures in CYRIC during the fiscal year of 2016 and 2017.

Dose range (mSv)	Number of individuals	
	2016	2017
0.0 - 5.0	329	319
5.0 - 10.0	1	0
10.0 - 15.0	0	0
15.0 - 20.0	0	0
20.0 - 25.0	0	0
25.0 - 50.0	0	0
50.0 -	0	0
Total number of persons monitored	330	319