

## Safety Management Group

### 1. Abstract

The RIKEN Nishina Center for Accelerator-Based Science possesses one of the largest accelerator facilities in the world, which consists of two heavy-ion linear accelerators and five cyclotrons. This is the only site in Japan where uranium ions are accelerated. The center also has electron accelerators of microtron and synchrotron storage ring. Our function is to keep the radiation level in and around the facility below the allowable limit and to keep the exposure of workers as low as reasonably achievable. We are also involved in the safety management of the Radioisotope Center, where many types of experiments are performed with sealed and unsealed radioisotopes.

### 2. Major Research Subjects

- (1) Safety management at radiation facilities of Nishina Center for Accelerator-Based Science
- (2) Safety management at Radioisotope Center
- (3) Radiation shielding design and development of accelerator safety system
- (4) Obtaining permissions for changes accelerators and use of radioisotopes

### 3. Summary of Research Activity

Our most important task is to keep the personnel exposure as low as reasonably achievable, and to prevent an accident. Therefore, we daily patrol the facility, measure the ambient dose rates, maintain the survey meters, shield doors and facilities of exhaust air and wastewater, replenish the protective supplies, and manage the radioactive waste. Advice, supervision and assistance at major accelerator maintenance works are also our task.

Periodic inspections for accelerator and radiation facilities required by law every three years were passed. Permissions to provide  $^{37}\text{Rb}$  to  $^{83}\text{Bi}$  nuclide beams from IRC to experimental rooms in Nishina building was obtained from Nuclear Regulation Authority of Japan. The permission also includes operation for several new unsealed radioisotopes. International Technical Safety Forum 2024, a conference on safety, health and environmental issues on large accelerator facilities was held at RIKEN Wako campus from 10th June to 14th. The aging large equipment, important for radiation safety management, was renewed. Large filter airtight chambers of exhaust system for RI-containing air in the radiation-controlled area in the Nishina building were replaced or repaired. The radioisotope monitoring system was also renewed.

## Members

### Director

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### Technical Scientists

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### Student Trainees

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**Administrative Part-time Workers**Satomi IIZUKA  
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**List of Publications & Presentations****Publications****[Original Papers]**M. Gohdo and T. Maeyama, "Ionizing radiation induced reaction in nanoclay hydrogel," *Chem. Phys. Lett.* **856**, 141656 (2024).M. Gohdo and T. Maeyama, "Time-resolved observation of DHR123 nano-clay radio-fluorogenic gel dosimeters by photoluminescence-detected pulse radiolysis," *Biomed. Phys. Eng. Express.* **10**, 065049 (2024).**Presentations****[International Conference/Workshop]**

A. Akashio (plenary), K. Tanaka, N. Shigyo, K. Sugihara, and H. Haba, "Design of radiation shield for RI production beam line by PHITS," Joint Symposium on Nuclear Data and PHIS in 2023, Ibaraki, Japan, November 15–17, 2023.

**[Domestic Conference/Workshop]**

田中鐘信 (招待講演), 「RIBF 加速器施設の火災対応状況」, 第 86 回放射線防護研究会, 文京区 (千代田テクノル), 2024 年 2 月 15 日.