

## I Preface

### 1. Background of the Revision

At Kanazawa University, our education, research, and medical practices generate a variety of waste that must be properly disposed of in accordance with the Basic Environment Act, the Waste Management and Public Cleansing Act, and related laws and regulations to ensure environmental preservation, people's health and safety, and effective utilization of resources. In addition, we must make our utmost efforts to suppress the generation of waste and promote recycling of resources in accordance with the Industrial Safety and Health Act. For this purpose, it is most important for everyone who studies or works at the university to be fully aware of his or her own obligations and responsibilities regarding safely and properly disposing of waste.

The Environment Preservation Center prepared a tentative version of the 'Handbook of Disposal of Chemical Waste' in August 1981 and issued its official version in March 1984. The center was then subject to revisions of laws and regulations related to the disposal of waste, publication of a revised version of the 'Guide for Waste Management at Universities in Japan' (by the then Ministry of Education in November 1992), update of processing systems at the center, review and revision of related rules, and introduction of a Chemical Substance Management System; and revised the handbook in March 1995, March 1999, and March 2005 to comply with these changes. In addition, requirements related to environmental preservation and the handling of chemical substances became stricter. At the same time, the university had completed various rules and regulations related to the handling of chemical substances by establishing the Environment Management Regulations, Bylaws of Chemical Substance Management, and Bylaws of Waste Management. In August 2015, organic liquid waste treatment equipment (incinerator) became unusable due to deterioration over the years and reached the end of operation. We then outsourced organic liquid waste treatment to external processing companies. Based on a study conducted in FY2015 of our future liquid waste treatment, we determined to outsource both organic and inorganic liquid waste treatment to external processing companies, and obtained approval of the president of the university. An annual outsourcing contract agreement for organic liquid waste (including solvent waste and dilute organic solutions) was entered into in October 2016. The deteriorated inorganic liquid waste treatment equipment ceased operation in April 2017, and the waste treatment was outsourced to an external processing company.

The handbook was then determined to be comprehensively revised to ensure consistency with these changes. The name was changed to the 'Handbook of Chemical Substance Management and Waste Disposal,' and covers entire management of chemical substances. Under these circumstances, we would greatly appreciate parties related to the university cooperating in the proper management of chemical substances and waste disposal.

### 2. Chemical Substances and Waste

Chemical substances covered by this handbook are defined as chemical substances (chemicals, cleaning agents, fuel, etc.) handled at the university, including synthetic compounds as well as commercially available products in the form of solids, liquids, or gases. Pharmaceutical products and radioactive isotopes (RI) require independent management by law and are currently managed by a specialized section at the university. Therefore, descriptions of the management of these substances are omitted here. Waste covered by this handbook is defined as waste specified by the 'laws related to the disposal and cleaning of waste.' Infectious waste is managed mainly by an independent university committee, and the details are thus omitted here.

Chemical substances contain a variety of potential risks. These risks can be broadly divided into those that cause fire or explosions, those that are poisonous or hazardous to human health, and those that damage the environment. These substances must be handled by appropriate persons only after sufficiently understanding their potential risks.

Users of chemical substances, regardless of whether they are faculty members, staff, or students,

must fully recognize their responsibilities to understand the risks of using chemical substances, make efforts to use alternatives or reduce consumption, prevent hazards and environmental impact, process or dispose of the chemical substances in appropriate ways (under users' responsibility to understand how the chemical substances they use are to be disposed of or processed), and properly manage them (throughout their handling of steps from the point of purchase through to use and disposal).

※ This handbook is posted on the Environment Preservation Center website.

(<http://hozen2.epc.kanazawa-u.ac.jp/>)

## II Precautions for the Purchase, Storage, and Handling of Chemical Substances

To recognize that chemical substances are harmful and hazardous in nature and to handle them safely, users must sufficiently understand the characteristics, properties, and degree of risk of the chemical substances they use. All steps through acquisition (purchase), storage, use, and disposal are specified by applicable laws and regulations, and users are required to take responsibility for their management. Under such circumstances, a plan must be formed at the experimental planning stage by taking acquisition, use, and disposal into consideration. In addition, the specific precautions as listed below shall be observed in addition to other related laws and regulations and general precautions.

### 1. Precautions for purchase and storage

- 1) Purchase and store chemicals in the minimum required quantities. Only store necessary chemicals.
- 2) Study the safety data sheets (SDSs) of the chemical substances to understand their details (such as applicable laws and regulations, methods of handling, and methods of disposal) before you purchase them.
- 3) Upon receiving chemicals, check the containers and packaging, confirm that they are free of damage or liquid leaks, and register them in the Chemical Substance Management System.
- 4) Classify storage sites according to properties of the chemicals (toxic and deleterious substances, acid or alkaline substances, solid or liquid, organic or inorganic substances, etc.) by following precautions on labels or SDSs, and sort them by properties in chemical cabinets to prevent mix-ups.
- 5) Fix chemical cabinets to the floor or wall, and take preventive measures against falling.
- 6) To prevent damage or falls due to collision of chemical bottles in the cabinet, place appropriate partitions and rails, and provide each shelf with anti-slip measures and falling prevention rails. In addition, use trays to collect drippings.
- 7) Store and handle specified chemicals according to the specified standards.
- 8) Do not store chemicals designated as hazardous substances in a large quantities unnecessarily. (Use specified hazardous substance cabinets instead.)
- 9) Use refrigerators to store chemicals that become unstable at room temperature. Note that solvent vapor may leak from them during storage and become a source of ignition if they are stored at room temperature.
- 10) If a label is about to come off, securely re-attach it.
- 11) Periodically conduct inventory checks of chemicals.