The quantity of hazardous materials stored per laboratory must be one fifth of the designated quantity (0.2, which is the multiple of the designated quantity) or less. The designated quantity is specified in the Fire Service Act depending on the type of hazardous material (refer to Reference Material 3 at the end of this document). In YAKUMO, the multiple of the designated quantity is automatically calculated for each storage area (designated quantity ratio). In the case of a laboratory that is used by multiple Groups, the sum of the Groups is the multiple of the designated quantity for the laboratory. Thus, each Group must ensure management using a number calculated by dividing 0.2 by the number of Groups (Table 4-2) as a standard. The Standard Allocation Quantity can be adjusted between the Groups as long as the total of the Groups is within 0.2.

To store more than one fifth of the designated quantity, it is necessary to store the chemical substance in special equipment and notify a competent fire department. A large quantity of hazardous materials must be stored in a Small Quantity Hazardous Material Handling Area or a Hazardous Material Indoor Storage Facility .

Table 4-2 Restriction on the storage quantity for shared laboratories based on the number of Groups

Number of Groups	Initial value of the Standard Allocation Quantity of each Group
1	0.200
2	0.100
3	0.066
4	0.050
5	0.040

[What happens if hazardous materials are not stored properly?]

- In December 2018, a fire broke out at a university due to chemical reaction of hazardous materials. Experiment waste liquids including hazardous materials caught fire, etc., causing one laboratory to be completely burned down. A fire causes significant damage to the source of fire and the surrounding areas. Thus, hazardous materials that are likely to cause a fire must be stored properly.

4. Storage of mercury, etc.

Mercury is discharged from various sources into the environment through anthropogenic activities, such as combustion of fossil fuels and disposal of waste. It circulates and builds up in the global environment. The mercury concentration in marine organisms has been rapidly increasing due to the increased discharge from anthropogenic activities since the Industrial Revolution. There is concern about the impact on people in the Arctic Region, who consume a large amount of fish and seafood, etc. Against this backdrop, the Minamata Convention on Mercury was adopted at a diplomatic conference held in Kumamoto Prefecture in October 2013 to prevent global environmental pollution from mercury. In Japan, the Act on Prevention of Pollution by Mercury of Environment (Mercury Pollution Prevention Act) came into force on August 16, 2017. The University Guidelines stipulate the storage of mercury, etc. as follows.

Article 11 of the Guidelines (Storage of Mercury, etc.)

When storing mercury, etc., the Chemical Substance Managers shall carry out the following matters.

(1) The containers or packages that are used to store mercury, etc. shall be made from carbon steel or stainless steel that does not react with mercury, etc. at normal temperature.
(2) The name of mercury, etc. (for mixtures of mercury, etc. (excluding cinnabar), the name and content of mercury, etc.) shall be indicated on containers or packages.
(3) Mercury, etc. shall be stored in a securely lockable storage location that indicates the name of mercury, etc. stored.

The Mercury Pollution Prevention Act stipulates the types of mercury, etc. that require measures to prevent environmental pollution during storage as follows. When any type of mercury above is mixed with other substances, it is subject to the regulation only when the content of such mercury, etc. is 95% or more of the total weight of the mixture. Store the mixture in a container made of stainless steel, etc. and indicate the name, etc.

[Types of mercury, etc. subject to the regulation]

- Mercury (including mercury contained in alloys with metals other than mercury)
- Mercurous chloride
- Mercuric oxide
- Mercuric sulfate
- Mercuric nitrate and mercuric nitrate hydrate
- Mercury sulfide (including mercury sulfide contained in cinnabar; cinnabar is subject to the regulation regardless of the content)

5. Storage of explosives' raw materials

The University was requested by the National Police Agency in 2015 and 2018 to enhance management of chemical substances that may be used as explosives' raw materials. Recently, there have been cases, etc. in which chemical substances that are stored at schools, etc. and may be used as explosives' raw materials are exploited to manufacture explosives. Given possible violations, such as terrorism, using explosives in the future, it is necessary to enhance management of storage. The University Guidelines stipulate the storage of explosives' raw materials as follows.

Article 2 of the Guidelines (Scope of Application)

(14) Explosives' raw materials: chemical substances that are likely to be used as explosives' raw materials specified in "Enhancement of Management of Chemical Substances That Are Likely To Be Used as Explosives' Raw Materials" (Cho-Bi-Ki-Hatsu No. 247 of the National Police Agency dated December 13, 2018)

Article 13 of the Guidelines (Storage of Explosives' Raw Materials, etc.)

The Chemical Substance Managers shall store the explosives' raw materials in a lockable storage location, manage the key for the storage location, and keep the storage location locked.

Of the 11 chemical substances subject to the regulation, six substances that fall under deleterious substances (potassium chlorate, sodium chlorate, nitric acid, sulfuric acid, hydrochloric acid, hydrogen peroxide) must be controlled and managed in accordance with "2. Storage of poisonous and deleterious substances." The other five substances (ammonium nitrate, urea, acetone, hexamine, and potassium nitrate) must also be stored in a lockable storage location as in the case of deleterious substances. A usage record sheet must be prepared to prevent loss and theft.