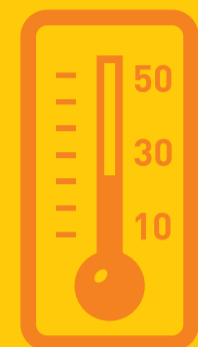


Basics of Preservation and Conservation for Library Materials

with memo space

For long-term use of materials



22°C

In addition, it is necessary that the proper temperature for optical disks is maintained between 10 to 25°C and the relative humidity is maintained between 40 to 60%, the proper temperature for film materials needs to be as low as possible and the relative humidity does not exceed 40% and not lower than 15%.

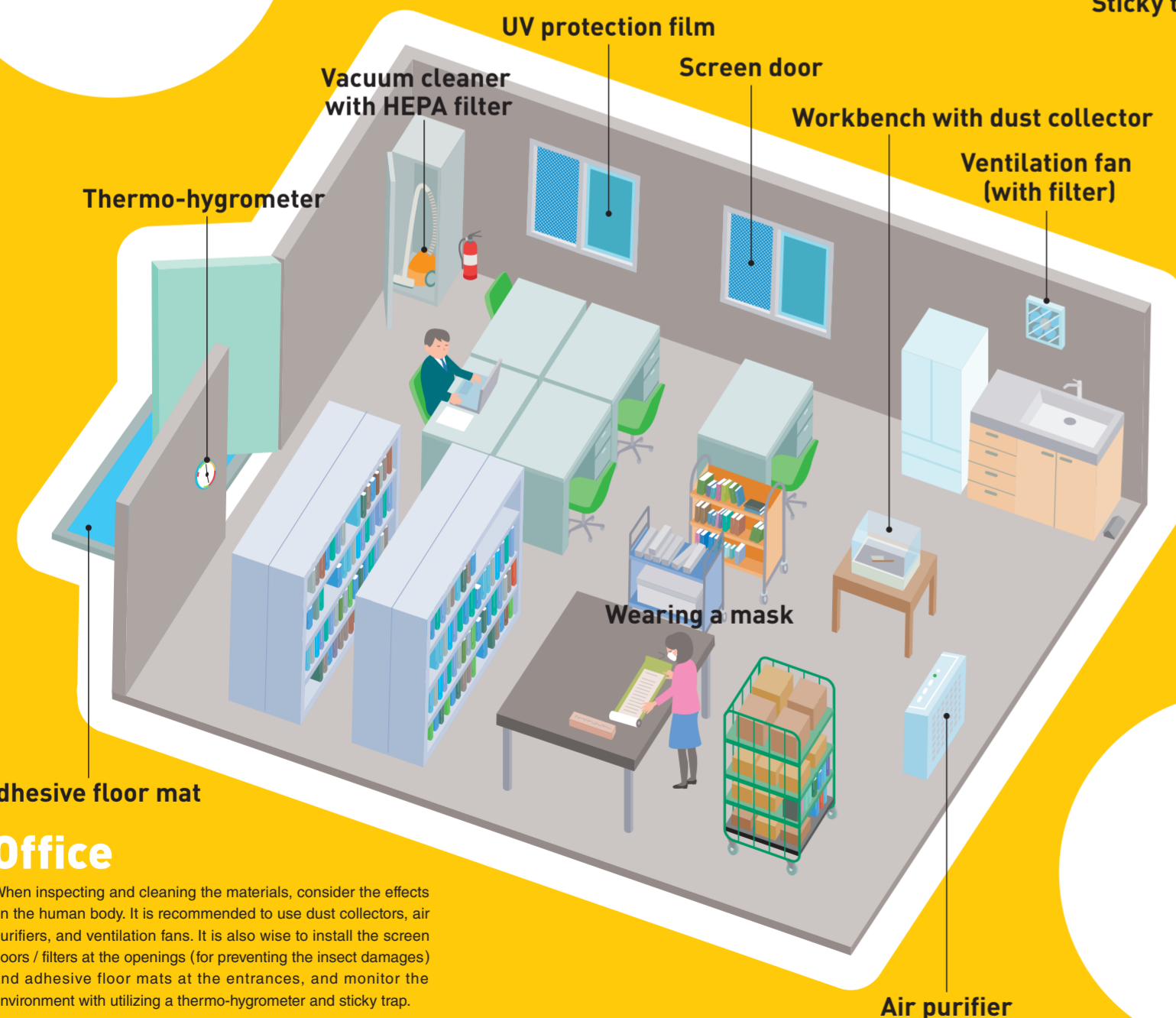


55%RH

Humidity control of paper materials

It is important to keep the temperature and humidity constant when storing materials. This is because when the relative humidity rises due to temperature changes, it causes dew condensation and leads to biological damage. In addition to the diurnal temperature range, we have to be careful of differences in the thermal conductivity of the facilities and equipment elements. Specifically, it is effective to use bubble cushioning wrap or airtight tape to increase heat insulation effect inside the room, keep the bookshelves away from the wall to secure a sufficient space, and use a basket cart while not placing the cardboard box directly on the floor.

MEMO



Office

When inspecting and cleaning the materials, consider the effects on the human body. It is recommended to use dust collectors, air purifiers, and ventilation fans. It is also wise to install the screen doors / filters at the openings (for preventing the insect damages) and adhesive floor mats at the entrances, and monitor the environment with utilizing a thermo-hygrometer and sticky trap.

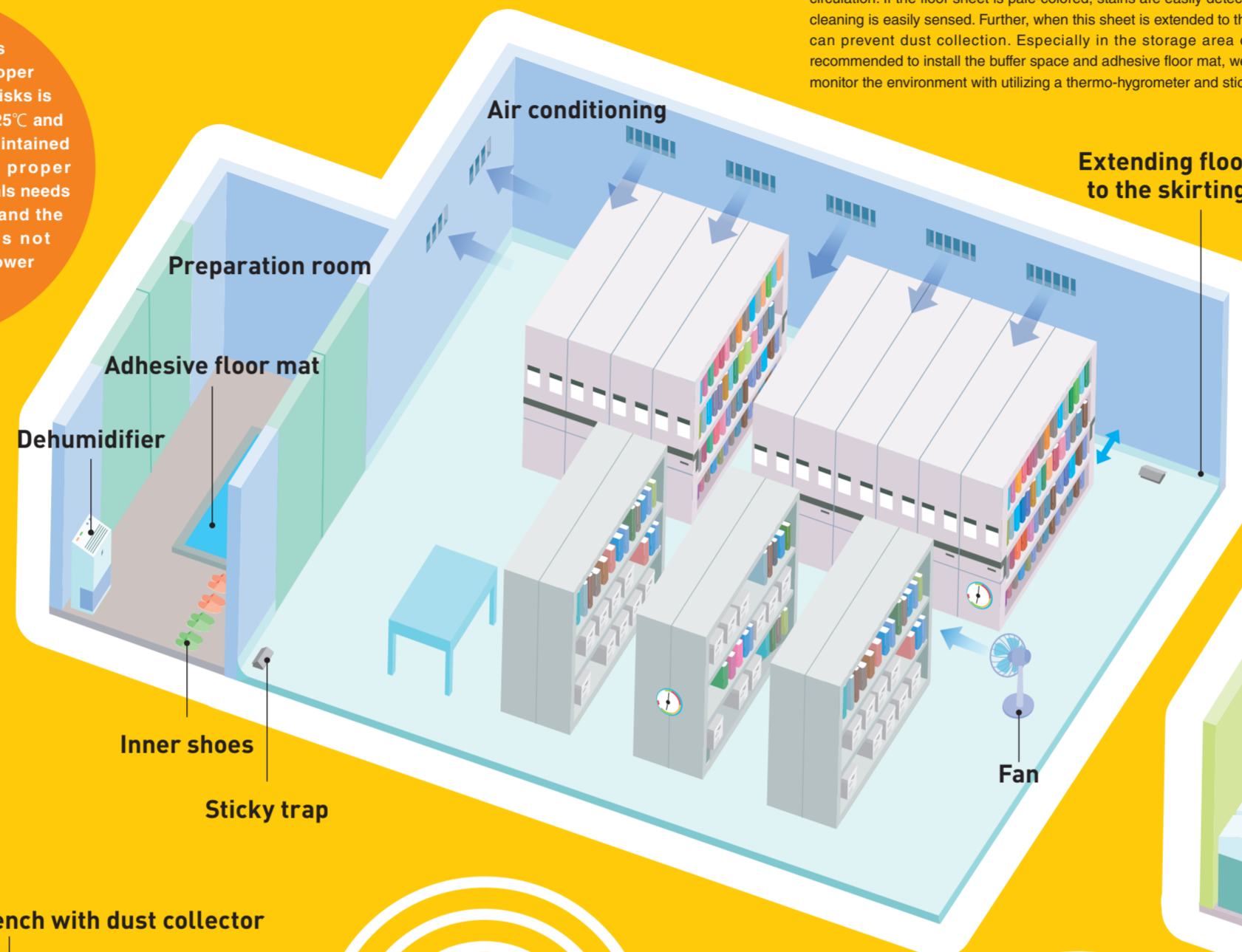
MEMO

Air conditioning

It is recommended to grasp the positions of the air supply/exhaust ports and the air conditioning system, also adjust the attachments of air supply port, and the locations of bookshelves and collections so that the wind dose not directly hit the materials or the materials with high thermal conductivity, such as metal and glass. It is necessary to keep that the environment around the air intake in the building is not contaminated, and to install various filters to control the irruption of pollutants and pests. It is also recommended to eliminate the air traps with using a fan. We can also prevent the water leakage from the air conditioner by installing it on the wall than the ceiling.

Stack-room

The bookshelves should not be attached to the wall in order not to prevent the air circulation. If the floor sheet is pale-colored, stains are easily detected and the need for cleaning is easily sensed. Further, when this sheet is extended to the skirting board, we can prevent dust collection. Especially in the storage area of rare books, it is recommended to install the buffer space and adhesive floor mat, wear inner shoes, and monitor the environment with utilizing a thermo-hygrometer and sticky trap.



MEMO

Dust / UV

Dust does not only feed the living creatures, but it also becomes a source of pollution once adhered to the materials and starts deteriorating them. Dust can become an allergen for humans as well. It is important to regularly clean the floor, bookshelves and materials. For cleaning, it is recommended to use a dust collector or a vacuum cleaner with HEPA filter with wearing a work cloth, mask, and gloves. UV rays not only promote the stains and discoloration of materials, but also attract the insects, so it is wise to use UV protection films and low-UV lighting.

Reading room

Secure a space barrier-free. Classify the reading room according to the importance of the handling materials. Install a hand-washing area, reading aids, and a foot wipe doormat. Take measures against crime and theft. Monitor the environment with a thermo-hygrometer and sticky trap.



Proper zoning

- **General**
As the importance of materials increases, it is essential to increase the level of management of the storage space in order from the periphery of the building to the inside or from the opening to the back.
- **Reading room**
There are two main areas: the reading area and the rest area. Furthermore, the former is divided into two spaces: one for general books and the other for rare books.
- **Office**
Maintaining an appropriate working environment
- **Stack-room**
Installing a buffer space (such as attaching a preparation room) and an adhesive floor mat, wearing inner shoes.

Tips for zoning

1. Classifying the material importance
2. Classifying the flow lines between human and objects
3. Providing an appropriate buffer space

MEMO

MEMO

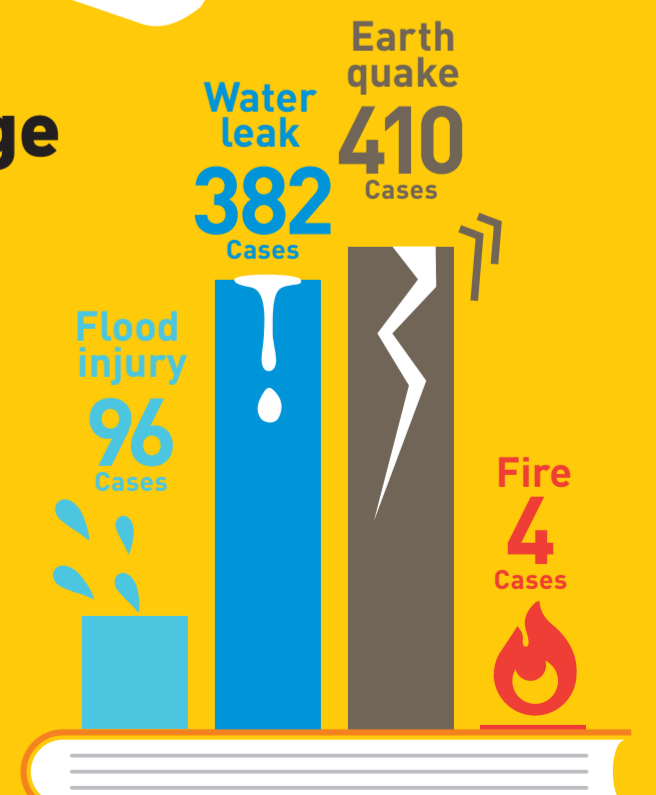
Mold damage 61.2%

About 60% libraries have experienced the mold damage. This ratio is much higher than the damage caused by insects and rats (about 20% libraries).

Prevention of the spread of damage

- **Earthquake**
Seismic isolation and reinforcement for the facilities and equipment. Prevent the books from falling by utilizing safety bars and friction tape on the bookshelves.
- **Water damage / leakage inflow**
Prevention of water infiltration by sandbags and water stop plates. Secure the products for the initial operation (buckets, vinyl sheets, vacuum cleaners which are able to suck liquid).
- **Fire**
Confirm the locations and operations of fire equipment, fire prevention equipment, and evacuation equipment. Secure evacuation routes and evacuation methods.
- **Others**
Confirm the hazard map

It is frequently reported that the libraries in Japan extremely have experienced the damage caused by the water leaks and flood injury.



Preservation and Conservation

Preservation

Library staff is as like the general practitioner for materials

Preservation and Conservation is a similar practice with patient care in medicine. Preservation managers conduct condition checks, investigations, restoration, chemical treatments on deteriorated and damaged materials, and they are corresponded to medical treatments such as medical examinations, tests, treatments, and medications by doctors. In addition, preventive conservation measures are comparable to public health precautions and decisions of conservation priorities are comparable to triage. Such way of thinking and direction is included in 10 points consisting of control, investigation, judgement, treatment, and risk management.

Investigation

Gathering and analyzing the information which are the basis for "control", "judgement", and "treatment".

Judgement

Preservation managers determine treatment priorities and treatment methods based on information obtained from "investigation" and "Preservation needs".

Control

Controlling the environmental conditions such as temperature and humidity, and the invasion of harmful insects in order to delay the physical deterioration of the materials.

Risk management

In addition to the normal "controlling", special preparation is conducted for dealing with sudden environmental changes, such as hit by a disaster.



This process requires library staff's meticulous attention because the materials, the substances adhered to them, or the chemicals for "treatment" may affect the human body.

Conservation

Treating the deteriorated materials in accordance with the priority and method determined by "judgement".

- Weeding
- Container
- Restoration
- Media conversion
- Chemical treatment

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I

II

III

Treatment



Personnel / Education



Facilities / Equipment



Finances

IFLA Principles for the preservation and conservation of library materials (1986 edition) divides "management of library materials" into two parts. First one is the concrete measures (Conservation) including restoration, and the other one is more comprehensive policy (Preservation) which manages facility development, personnel as well as financial affairs. This policy envisions the future use as well as treatment of library materials. In other words, "Preservation" is the core for long-term strategy and "Conservation" the core for short-term tactic of the material management of each library. For this reason, all measures and policies for library materials work efficiently only if they are linked to each other as well as to all the library operation.

Control

Controlling temperature and humidity



The deterioration of materials is caused by high temperature and high humidity environment. For this reason, it is important to maintain a low-temperature and low-humidity environment for preserving materials. However, this temperature and humidity control requires much cost depending on the climate conditions. It is strongly recommended to use heat insulation materials, bubble cushioning wrap, airtight tape in order to control the degrees of temperature and humidity completely. Condensation caused by temperature differences increases relative humidity, so the creation of a stable temperature environment regulated by heat insulation is indispensable for eliminating temporal and spatial humidity differences. Specifically, the temperature should be kept around 20°C (68°F) and the relative humidity should not exceed 65% in order to prevent causing mold. They should be adjusted in accordance with the recommended standards for each materials.



Control

Cleaning



For preserving materials, physical damage caused by living organisms cannot be ignored. It is no exaggeration to say that sanitation is the most crucial part of the "Integrated Pest Management" (IPM). The first step is to remove dirt and dust that become nutrients for living organisms. Regular cleaning is strongly recommended with using vacuum cleaner with ultra-high performance filter such as HEPA (High Efficiency Particulate Air) filter. In order to perform proper cleaning, it is necessary not to place materials directly on the floor or not to create a place where dust tends to accumulate. In addition, we can reduce the invasion of dirt from outside by laying doormat or adhesive floor mat at the entrance of the library and reading room, or simply changing to inner shoes.

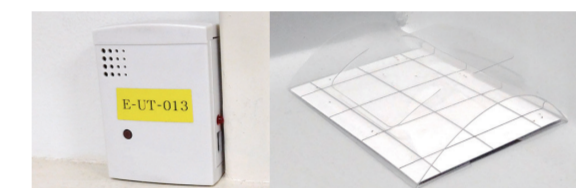


Investigation

Monitoring

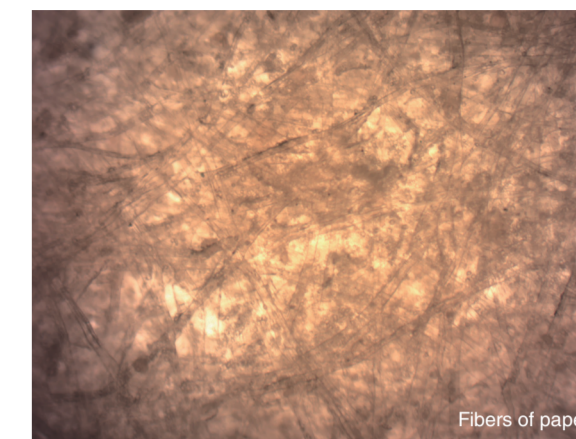


IPM puts an emphasis on early "detection" of abnormalities, along with "avoidance" from pests and molds by cleaning rooms and materials, and "blocking" routes by zoning. In addition to this visual observations, it is highly recommended to be regularly aware of sensing strange smells or humidity changes. Furthermore, it is effective to install an sticky trap (without using a pheromone attractant) in order to inspect the presence or absence of insects. It is essential to keep records by monitoring in order to "respond" quickly to the incidents and damages. While monitoring temperature and humidity, it is highly recommended not to rely solely on a data logger, but also use thermo-hygrometer in order to check the changes in the situation immediately.



Investigation

Knowing the characteristics of materials



Fibers of paper

The information that can be obtained from library materials is not limited to the contents described. Even with the same content, the type of paper and the structure of bookbinding will differ depending on the age and place of production, or the process of book making, as well as the provenance information. The content can be transferred to another medium, but these kinds of information can only be obtained by investigating the original materials. It is highly recommended to be aware of this difference between original and copy in order to properly preserve the materials.



Trace of provenance

Judgement

Prioritizing



When we handle with deteriorated or damaged materials, the first thing to do is consider its value status in library collections. In particular, if there is a large amount of degraded materials, we need to properly determine the measures and the order of treatment. It is highly recommended to prioritize the treatments by considering not only "Preservation needs" (necessity of physical preservation, condition of materials, and frequency of use) but also resource allocation of personnel and budget, as well as coordination between operations. This also includes the option of non-treatment or weeding of materials. Weeding based on an appropriate judgement leads further investment of resources for collecting more important materials and should be considered within the framework of preservation in libraries.

Treatment

Preservation container



When dealing with the large scale deterioration found such as in an entire collection (mass conservation), the first thing to consider is not to mend or restore each item one by one, but to improve the overall condition. By using preservation container made from archival board, the deteriorated materials can be prevented from further damages caused by acid gas, light, dirt, and physical contact. In addition, books broken to pieces can be preserved as a single unit by using container without paying effort for excessive mending or restoration. It is highly recommended to keep the concept of "Phased preservation program" in mind which conducts the performances in accordance with "Preservation needs", personnel, and budget affairs.

Treatment

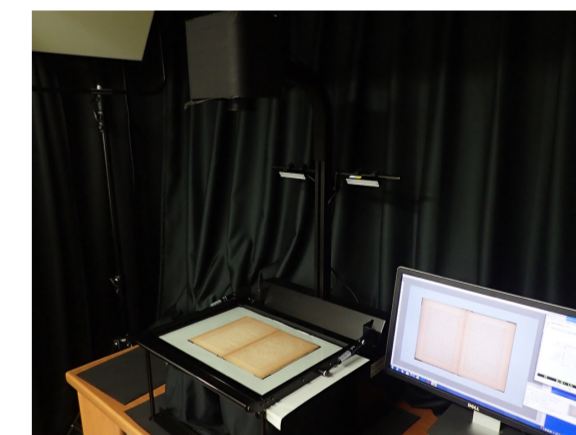
Restoration



In the modern way of preservation and conservation, the fundamental principle is to minimize "restoration" for damaged or deteriorated materials and it is only conducted if it is inevitable due to their use. For "restoration", there are four principles: (1) Principle of preserving the original shape is not to change the original shape as much as possible, (2) Principle of safety is to select a long-term stable, non-destructive methods / materials, (3) Principle of reversibility is to select methods and materials for recovering the original state if necessary, (4) Principle of recording is to leave the records of restoration which can be reviewed in the future. In addition, a comprehensive idea of "conservation", including restoration practices such as the options of precautionary measures and non-restoration, is widely accepted today.

Treatment

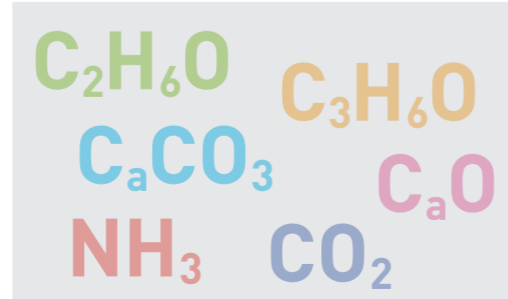
Media conversion (reformatting)



For the use of library materials, the main purpose is to browse content information. Materials that carry content will always deteriorate, but the content itself will not deteriorate. Therefore, by converting the content to another medium (media conversion), the deteriorated materials can continue to be used as library materials. In the case of rare books, we can manage them by separating the media; medium for browsing and medium for storage. There are many methods for media conversion, including digitization. The methods and their qualities are varied depending on the purpose of using converted media whether it is only for browsing or preserving for long-term period replacing the original material.

Treatment

Chemical treatment



Chemical treatment is irreversible and therefore, it contradicts the idea of "Four principles of restoration". In some cases, however, we have to rely on this treatment. For eradication of pest insects in recent years, non-chemical based methods (such as carbon dioxide, nitrogen, and deoxygenation) are recommended, but if there are emergent situation such as the outbreak of insects and mold, we have to carry out chemical fumigation. It is important to understand that the decision depends on the situation. In addition, chemical treatment for acid paper is an effective practice for long-term use if it is combined with physical treatment.

Risk management

Disaster prevention



On the occasion of disasters such as earthquakes, fires, and floods, it is necessary to take into account the malfunction of library operations and effects for users and staffs, together with direct damage to library materials. Priority is given to the safety of human beings, and we will deal with damaged library materials only after confirming that the damage will not spread further. Such occasions require us to take immediate reactions, and it is better to prepare and keep the priority list during normal time. When the library is hit by disaster, it is usually reported that water leaks frequently occur in addition to physical damage of library materials caused by falling. In order to reduce such risks, it is highly recommended to pay attention to the location of water path such as water conduits, and the state of air supply and exhaust ports that can also become the passages in case of water leakage.