Preserving Our History: Principles of Archival Conservation

Simple, Cost Effective Materials & Techniques for Protecting Paper Documents, Books and Periodicals

Principles of Conservation

- Understand the materials you are working with
- Protect from environmental damage
- Stabilize deterioration
- Repair as needed (if possible)
- *Do nothing that cannot be undone*

What Is Paper?

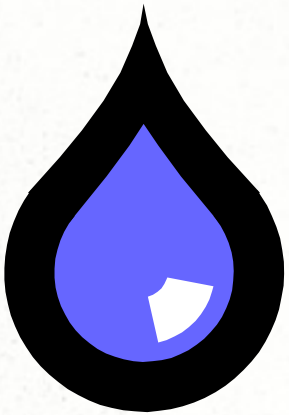
- Cheap modern paper is made from wood pulp; better paper is from rags
- Wood is a natural composite material of cellulose polymer fibers with lignin binder
- Pulping separates fibers from lignin, often using acids
- Cellulose fibers are formed into flat sheets, with chemical binders and coatings added

The Enemies of Paper

Documents and books must be protected from anything that may degrade paper fibers and binders:

- **Moisture**
- **Heat**
- **UV Light**
- **Fire**
- **Metals**
- **Handling**
- **Acidity**

Protection from Moisture



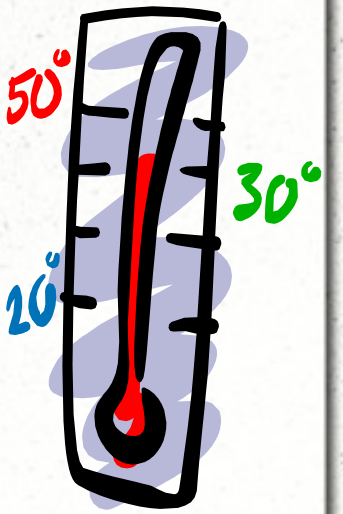
Water releases paper binder, promotes mildew and rot, so:

- Store documents away from water pipes, leaky ceilings and outside walls
- Protect from fire sprinklers
- Store in areas with air conditioning and/or dehumidifier in hot, humid climates
- Place desiccants in closed cabinets with important documents

Protection from Heat

Chemical reactions that cause degradation of paper speed up with increased heat, so:

- Store documents away from heating vents
- Do not store in attics, car trunks or other areas where heat can accumulate
- Store in air conditioned areas whenever possible



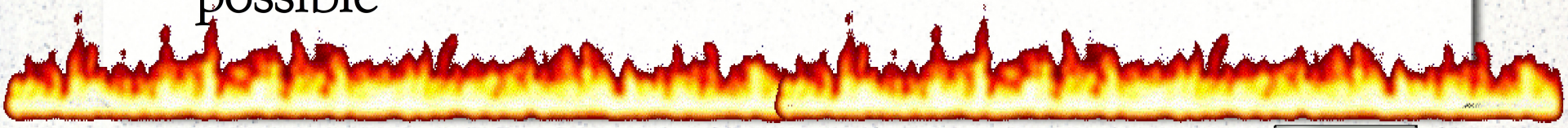
Protection from UV Light

UV is strongest in sunlight and fluorescent light, causes premature aging in paper, so:

- Store documents away from windows and direct sunlight
- Use UV filters on fluorescent lights in rooms and display cases
- Limit photocopying of originals
- All light has some UV, so dimmer is better

Protection from Fire

- No Smoking, open flames or other sources of ignition in the Archives!
- Make sure all wiring and electrical fixtures are in good shape
- Do not overload electrical outlets
- Avoid using extension cords
- Use fire resistant storage wherever possible
- Install automatic fire extinguishing system, if possible



Fire Resistant Construction

If you are building a new area:

- Use steel fire-rated doors and jambs
- Use double layer of gypsum drywall for 2-hour fire resistance rating
- Use steel studs in place of wood
- Install steel shelving in place of wood
- Insurance rates are generally lower with fire resistant construction

Protection from Metals

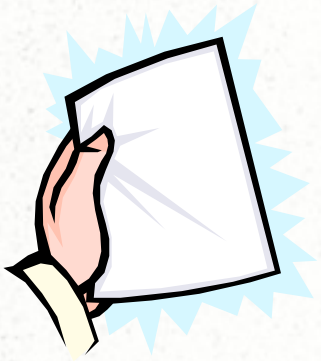
Common metals, especially iron, cause chemical reactions that destroy paper, so:

- Remove staples!
- Do not use metal paper clips
- Do not store in binders with metal parts that contact the paper

Protection from Handling

Handling transfers oils, moisture, acids and salts to documents, so:

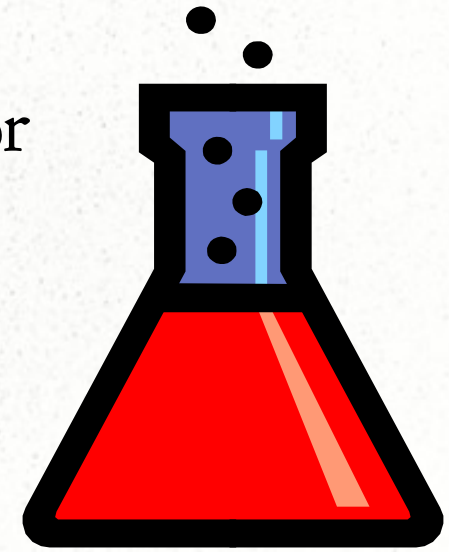
- Wash hands before working with documents
- Encapsulate documents in Mylar
- Handle especially sensitive materials only with cotton gloves



- Restrict access, and handle all documents carefully to prevent tearing and creasing

Protection from Acidity

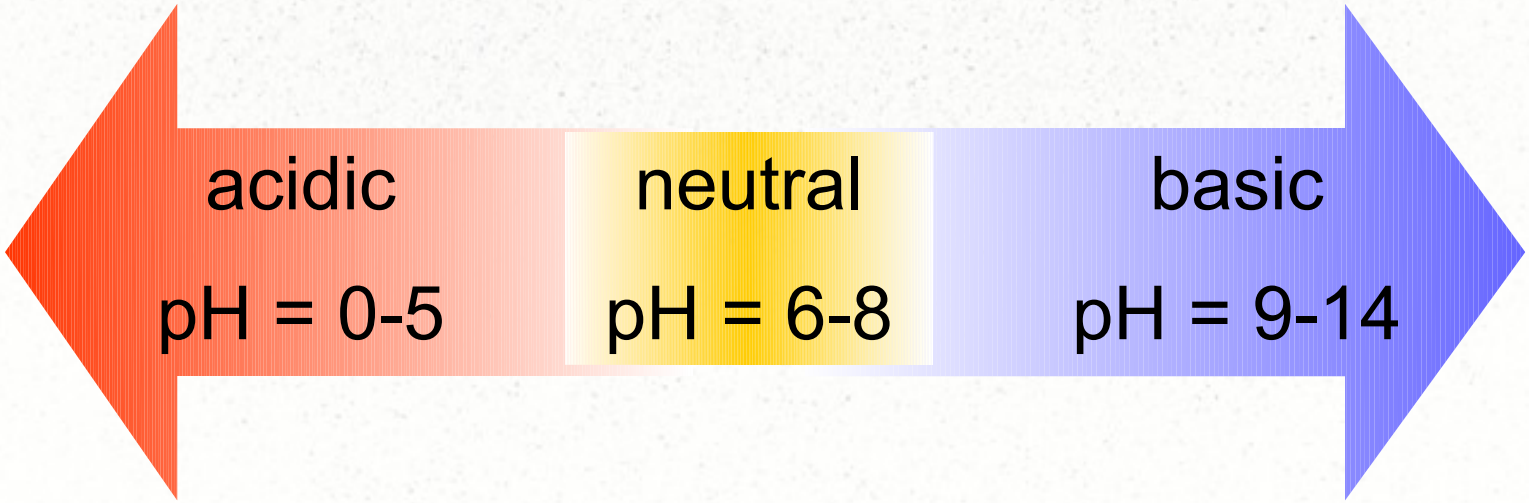
Most modern paper is made by acid pulping process; CO_2 in air also adds acidity. Acids cause paper to turn brown and brittle, so:



- Test paper for acidity using indicator pens or pH meter
- Treat acidic paper to neutralize and leave alkaline reserve
- Store in acid-free folders and boxes
- Encapsulate to reduce contact with air

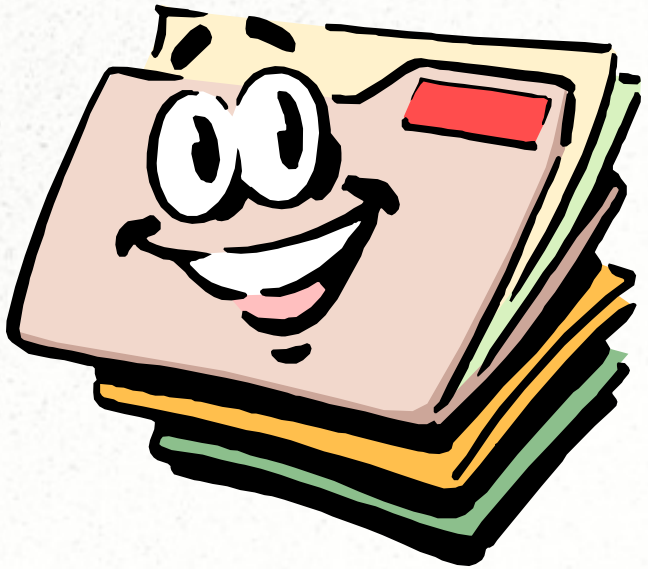
What Does pH Mean?

- pH is a measure of how acidic or basic something is
- The pH scale is 0 - 14, with 0 the most acidic, 14 the most basic



Conservation Materials

- Acid-free folders
- Plastic paper clips
- Mylar sheets and envelopes
- UV light filters
- Cleaning compound
- Deacidification solutions
- Methyl cellulose
- Repair tissue



Steps in Conservation

1. Record the acquisition
2. Assessment - what action is needed, if any?
3. Remove staples, paper clips, tape, backings
4. Clean
5. Repair
6. Deacidify
7. Encapsulate
8. Select storage or display conditions

① Record the Acquisition

- All documents, books, photos, etc. should be logged in file system or computer database
- Record information helpful in accessing (e.g., title, author)
- Note condition of item as received
- Record any known history of item, including donor, groups or events associated

② Assessment

Examine the document for:

- Staples and paper clips
- Tape and glued backings
- Dirt and stains
- Tears and folds
- Yellowing and brittleness

③ *Remove Staples & Backings*

- Remove staples gently, by bending up and clipping off ends - do not use staple remover!
- Remove paper clips, replace with plastic clips
- Remove paper or cardboard backings, if possible - they are often acidic
- Remove adhesive tape, if possible

④ Document Cleaning

- Do not use common erasers
- Surface dirt can be removed with document cleaning powder
- Be careful not to remove pencil marks that might be historical
- Most stains cannot be removed without damaging the document

⑤ Document Repair

- **No Scotch tape!**
- Avoid using materials that solvents for removal
- Archival quality repair tapes are available that are water reversible

- Tissue repair produces nearly invisible mends
- Methyl cellulose solution softens creases

⑥ Deacidification

- Most paper made in the last 100 years contains acids that cause deterioration
- Acid causes paper to turn brown and brittle, so check darkest documents & books first
- Indicator pens can show acidity in paper but leave small permanent stain
- Test small area before treatment to ensure inks will not run or fade

Commercial Deacidification Treatments

- **Wei T'o**
  - Uses flammable solvents
  - May attack some inks
  - Clogs spray nozzles
  - Less expensive
- **Bookkeeper**
  - More expensive
  - Nonflammable
  - Less likely to attack inks and bindings
  - Less clogging
  - Approved by Library of Congress

Homemade Deacidification

Commercial treatments are very expensive for large quantities. A cheap, water-based treatment can be made at home.

- Uses readily available ingredients
- Invented by maker of Wei T'o
- Used by some major archives

- BUT -

- **Suitable only for limited types of materials, such as newspapers - test first!!**

⑦ Encapsulation

- Use only archival quality, acid-free clear polyester (Mylar) film
- Seal seams with double-sided tape or heat
- Leave small air gap in seal
- Leave top open for multipage documents, such as newsletters

Fragile books can be protected in home-made, acid-free phase boxes

⑧ Storage & Display Conditions

- Choose conditions appropriate to the age, condition and rarity of the document or book
- Don't forget security!