Technical Bulletin 11

Canadian Conservation Institute

Institut canadien de conservation

Dry Methods for Surface Cleaning Paper

Canadian Heritage Patrimoine canadien

Canada

Technical Bulletin No. 11

Dry Methods for Surface Cleaning Paper

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Published by the
Canadian Conservation Institute
Department of Canadian Heritage
1030 Innes Road
Ottawa ON K1A 0M5
Canada

ISBN 0-662-30077-7
Cat. No.: NM95-55/11-2001E
Updated 2001

Texte également offert en français
Techniques de nettoyage à sec du papier

Printed in Canada

CCI Technical Bulletins

Technical Bulletins are published at intervals by the Canadian Conservation Institute in Ottawa as a means of disseminating information on current techniques and principles of conservation of use to curators and conservators of Canada's cultural artifacts. The authors welcome comments.

Abstract

This bulletin is a practical instruction guide for those responsible for the care and preservation of collections of works on paper. The problems caused by dirt are described, as are potential difficulties arising from the nature and/or condition of paper artifacts. Cleaning materials and techniques are discussed, and suggestions are made regarding specific types of works of art and archival material.

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This publication is printed on recycled paper.

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Introduction

Works on paper form a significant part of cultural heritage, and most museums and galleries house paper artifacts of either historic or artistic nature. Keeping these collections free of dust and dirt is an important part of their general care and maintenance. The removal of surface dirt is a procedure that can be carried out safely by gallery or museum personnel if recommended materials and methods are used. Surface cleaning of paper (also known as dry cleaning) should be straightforward, but serious and irreparable damage can occur if the recommended materials and methods are not applied with caution.

The practical advice in this bulletin takes into consideration some of the general properties of paper and its condition that may affect surface cleaning, as well as some of the pertinent characteristics of specific types of artifacts. This understanding of the materials involved and awareness of potential problems will aid readers in making sound judgements, and enable them to proceed with confidence. Museum and gallery staff are advised to read the entire bulletin before proceeding with any surface cleaning.

The basic cleaning techniques described in this bulletin can also be applied to the parchment, vellum, and leather bindings that are often found in general collections of works on paper.

Note: This bulletin does not address surface cleaning of rolled works on paper or those with significant cockling. Consult a paper conservator before attempting to surface clean works on paper in this condition.

The Nature of the Problem

Why is it important to clean paper artifacts?

Aesthetic considerations
Dust and dirt disfigure and obscure works.

Abrasion
Deposits of dry particulate matter between papers can have an abrasive effect.

Staining
If dirt becomes moist from high humidity or flooding, it can be carried further into and across the paper. A concentration of dirt and other dissolved substances is then deposited at the edges of wet areas, causing staining. Removal of stains may require major conservation treatment.

Mould
Mould spores from the air settle on exposed paper. At high relative humidity the mould can begin to grow, thriving on sizing, fillers, and (in some cases) cellulose in paper. This mould growth weakens the paper and may permanently stain it. Surface cleaning to remove accumulated surface dust and dirt will help to reduce not only the number of mould spores present but also the nutrients that could nurture the mould spores. Mould spores are everywhere in the environment, and it is impossible to eliminate them completely; however it is possible to prevent the growth of mould by controlling the environment. In the event that dormant or active mould is discovered on books or other works on paper, consult a paper conservator before attempting to clean the artifact.

Acids
Atmospheric pollutants are also harmful to paper. The incomplete combustion of fuels from automobiles and heating systems in urban and industrial areas yields metal and carbon particles, hydrogen sulphide, sulphur dioxide, and sticky or tarry materials. These pollutants and other airborne contaminants are readily absorbed by paper, and can seriously alter its pH.

High acid levels in paper are a major cause of deterioration. When acid contaminants from the environment are added to already high acid levels in poor-quality or degraded papers, deterioration may occur more rapidly. Sulphur dioxide, in the presence of light, moisture, and metallic impurities found in dust and dirt, is converted to sulphuric acid which is devastating to paper. Sulphuric acid can form in the air (thus making the settling dust acidic) or it can form in the paper itself (as sulphur dioxide is readily absorbed).

Custodians of paper collections should make every effort to retard this harmful process. Keeping paper free of dust is an important step in dealing with this problem.

Wet treatment
Conservation procedures involving immersion or local wetting must be preceded by surface cleaning, as wetting will drive dust particles into the fibre structure of paper where they will become permanently trapped.

When is surface cleaning effective?

Various dry methods of surface cleaning will remove general surface dirt as well as loose dust, dirt, cobwebs, and mould spores.

Dirt that has become ingrained between the paper fibres below the surface will not respond to surface cleaning. Many deposits and stains (e.g. fly specks, wax, tar, oil, grease, fingerprints, crayon, inks, rust from staples and paper clips, adhesive residues such as hide glue, rubber cement, and white glue, and residue from gummed tapes and pressure-sensitive tapes) pose difficulties in removal, requiring the attention of a paper conservator.

Assessment of the Artifact to be Cleaned

Each artifact should be assessed individually to determine if cleaning is necessary and if it can be carried out safely. If any of the following conditions are present, treatment may not be possible.

Physical weakness of papers

Artifacts with thin areas, holes, or tears may be too fragile to clean. Stained areas and those attacked by mould may be unsound. Even strong high-quality papers can be damaged when weak areas are cleaned.

Poor-quality degraded papers

Papers made from mechanically ground wood are commonly used for posters, newspapers, inexpensive books, and prints meant to have a short life. However many of these have found their way into public collections. These papers contain harmful impurities from the wood and from the manufacturing process, and the fibres are short and weak. Ground wood paper has very poor aging properties; it rapidly becomes discoloured and brittle and is easily damaged.

If this type of paper is severely degraded, even the gentle use of an eraser may cause fragmentation. If a paper artifact is too fragile to handle without damage, it cannot withstand surface cleaning of any kind. If separate fragments accompany an object that is to be cleaned, be sure to treat all pieces in the same manner.

Lightweight papers

Flimsy papers (e.g. onion skin and carbon copy paper) are delicate. They crease easily and, when they are brittle because of high acidity, they tear easily. If it is absolutely necessary to surface clean thin papers, do so with extreme caution.

Soft-textured papers

A soft porous paper containing a minimal amount of size will trap particles of erasing powder, as well as dirt and dust. It may be impossible to brush away all the residue left by erasing materials.

Long-fibred Japanese papers can be very soft and absorbent by nature. Neither erasing blocks nor surface cleaning powders should be used on these papers.

Mould can produce local softness by consuming the size and degrading the cellulose in an otherwise sturdy paper. Areas attacked by mould are more easily abraded than are surrounding areas.

Water, introduced through local wetting or during conservation treatment, can wash some sizes away. If the size is not replaced the texture of the paper will become softer and more porous.

Hard-surfaced papers

Some non-porous papers have a highly calendered, slick, hard, or waxy surface. Many of these papers are heavily coated (e.g. those used in reproduction printing). Any attempts at erasure can smudge the dirt and inks, and mar the surface gloss.

Surface Cleaning Methods and Materials

Removal of loose dust and dirt is the first step in cleaning paper. This can be accomplished with brushing, dusting, or vacuuming. Further cleaning will require the application of erasing compounds (Figure 1).

Brushing

Brushes with soft flexible bristles are useful for removing loose dust (a wide flat brush will generally be more suitable than a round one). Use a larger brush for large artifacts and a smaller brush for small or fragmented works. Cover the ferrule (the metal piece that holds the bristles onto the handle of the brush) with Teflon plumber's tape so the sharp metal edges can't accidentally scratch the book or paper artifact.

A stiffer brush may be required for removal of encrusted dirt such as mud. Once the hardened dirt is removed and the paper surface exposed, switch to a softer brush. Stiff bristles dragged across a soft degraded paper in the presence of abrasive mud particles can damage the surface.

A photographer's blower brush is useful for dislodging loose dirt from areas that cannot withstand brushing. A puff of air from the blower without use of the brush may be all that is required.

Dusting

A soft cloth such as cheesecloth can be used to remove dust from the tops of books, but care should be taken to avoid catching torn or loose edges. Commercial dusting cloths with an electrostatic charge (e.g. Dust Bunny cloths, which are lint-free, washable, and re-usable) can also be used, but chemically treated dusting cloths should be avoided as they could leave a residue on the artifact.

Vacuuming

A vacuum cleaner is useful for cleaning shelving and removing dust on books, and can also be used on the back

of very dirty artifacts mounted on cloth. However it is important not to apply the vacuum directly to the artifact, but instead position it nearby and brush the dust toward the nozzle.

The advantage of a vacuum cleaner over a dusting cloth or brush is that it collects loose dirt rather than redistributing it. For extensive cleaning with a vacuum cleaner, it should be fitted with a high efficiency particulate air (HEPA) filter. This will ensure that both dust and mould spores are not returned to the environment.

A round vacuum brush with soft bristles is the most useful attachment (mini-tool vacuum cleaner adaptor kits are available with several different sizes of small nozzles and brushes; these are particularly useful for cleaning books). When using a vacuum cleaner to clean artifacts, place a filter over the nozzle to prevent loose or detached fragments from being taken up (Figure 2). Put a piece of fibreglass screen, cheesecloth, or other open-weave mesh in the throat of the brush to act as a filter. Check frequently for fragments of the artifact clinging to the screen or cloth. Replace the cheesecloth or screen when it becomes blocked with dust.

Erasing compounds

After dealing with loose dirt, general surface dirt (which is more difficult to remove) can be treated using an erasing compound prepared from a suitable eraser. Ideally an erasing compound should be chemically inert, not physically disruptive to the paper, and of sufficient particle size to permit thorough removal from the paper. A number of products are available in art or drafting supply stores, but analysis has shown that some commercial products contain abrasives and some have changed in composition or manufacturing method without a corresponding change in product designation; therefore these commercial products may not be reliable.

Two of the most effective vinyl erasers (Staedtler Mars Plastic and Eberhard-Faber Magic Rub 1954) are also available as erasing compounds (referred to as eraser crumbs) in several different grinds. These eraser crumbs were analysed by CCI in 1995 and found to be identical in composition to Staedtler Mars Plastic and FaberCastell Magic Rub 1954 erasers that had been analysed in 1981. [The erasers and eraser crumbs were analysed using infrared spectroscopy and X-ray microanalysis. They were composed primarily of poly(vinyl chloride), phthalate plasticizers, and calcium carbonate.] The consistency of these results suggests that the composition of these products is reliable.

To remove surface dirt, sprinkle the granulated erasing powder over the area to be cleaned. Work over the surface with a small ball of absorbent cotton, using a gentle circular motion moving from the centre toward the outside. Use of the fingers for this purpose is not recommended because of the presence in skin of oils, moisture, acids, and salts that might transfer to the paper. A back-and-forth scrubbing action should also be avoided.

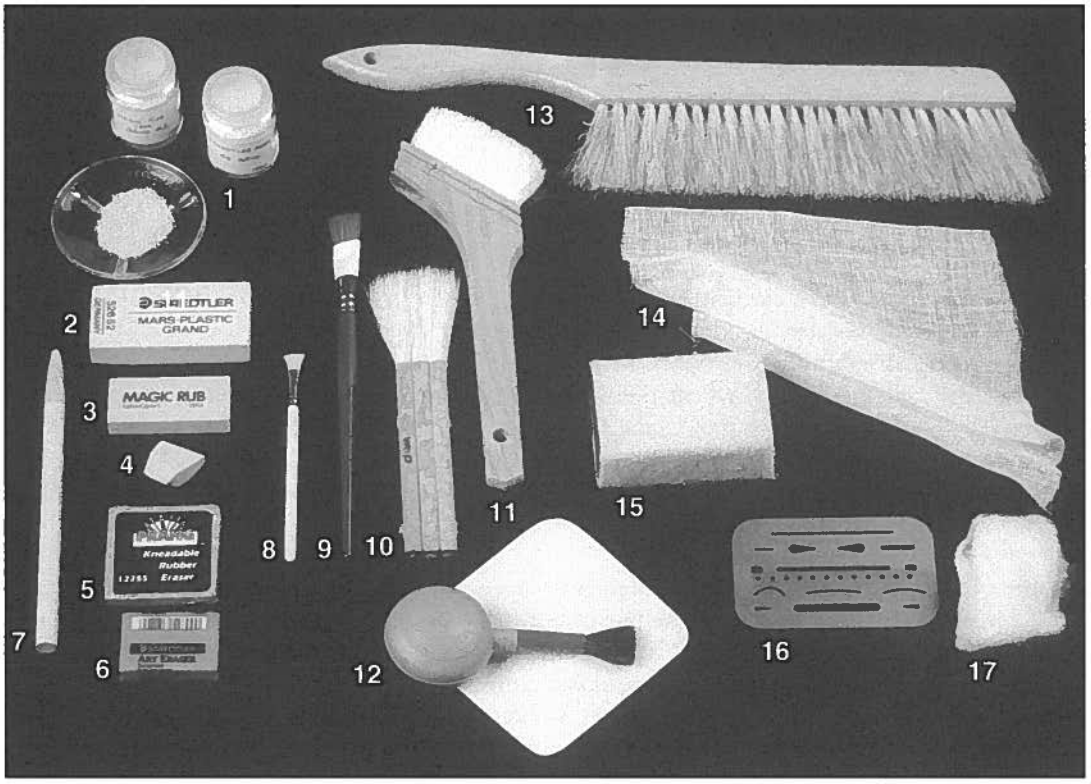

Figure 1. A variety of tools can be used for surface cleaning paper.

1. erasing compounds
2. Mars Plastic eraser
3. Magic Rub eraser
4. cut eraser
5. kneadable rubber eraser
6. Art Gum
7. Magic Rub peel-off pencil eraser
8. stiff brush
9. soft brush
10. brush to remove dust
11. brush to remove eraser crumbs
12. photographer's blower brush
13. brush to clean work bench
14. cheesecloth
15. weight
16. draftsman's erasing shield
17. absorbent cotton

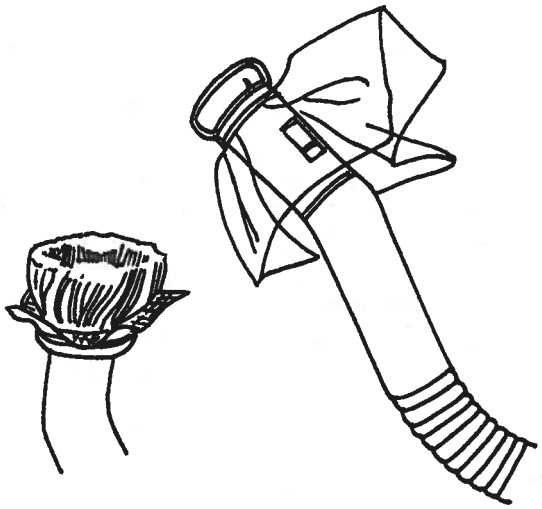

Figure 2. Fibreglass screen, cheesecloth, or other mesh can be placed over the throat of a vacuum cleaner brush or hose end to act as a filter.

Replace the cotton as it becomes dirty; the powder can be used until it becomes darkened with dirt.

When the surface has been cleaned, use a soft brush to remove the residue; brush in one direction only, from the centre out. Do not use a hand or a vacuum cleaner to brush particles away, or pick the object up to shake particles free. Several brushings may be necessary to remove all visible traces of the powder. As some of the substances found in cleaning powders are potentially harmful to paper, the need for thorough removal of residual eraser particles cannot be overemphasized.

The use of cleaning pads (soft woven bags sewn across both ends and filled with loose erasing powder) is not recommended. The mesh permits only the fine particles to pass through, and these are extremely difficult to remove from the artifact.

Erasers

The gentle overall action of cleaning powder may not be sufficient to remove resistant dirt; in such cases an eraser will be required. A wide variety of erasers, most of which are made from rubber or poly(vinyl chloride), can be obtained from art and drafting supply stores. In general the poly(vinyl chloride) erasers are more efficient and less physically disruptive to paper substrate. Both types of eraser harden as they age and should be replaced when this occurs.

Rubber erasers are available in varying degrees of hardness. Some contain very harsh abrasives that can disrupt and thin the paper. To keep abrasion to a minimum, use only soft erasers. In specific situations, kneadable grey rubber erasers can be softened with the fingers, worked into a useful shape, and used with a blotting or rolling action to lift particles that might smudge with rubbing or brushing. Traditional Artist's Gum (or Art Gum) can be used, but tends to crumble.

Two of the most effective vinyl erasers are Staedtler Mars Plastic and Eberhard-Faber Magic Rub 1954. The latter is available in a peel-off pencil as well as a less abrasive block, which is soft, white, and can be cut to a clean edge if desired. Before using any eraser, take a sharp knife or scalpel and scrape off the ink showing the name and manufacturer; this will avoid transfer of ink to the object or hands during use.

Ensure that an artifact is firmly supported before applying an eraser. Guard it against slipping during treatment. Use smooth even strokes in one direction only as movement back and forth can crumple or tear paper, particularly along edges, tears, or holes. It is safer to go over each area repeatedly with a gentle rubbing action rather than once vigorously. One way to control the edge of the area being cleaned is to cut the eraser to a clean edge when it becomes rounded with use. Use of a draftsman's erasing shield will permit erasure around inscriptions and other small sensitive areas without risk of smearing or accidental erasure. [A draftsman's shield is a thin metal or plastic sheet with open areas that can be used to contain the erasure stroke.] Use a soft brush to remove eraser crumbs from the paper surface.

Inappropriate Materials and Methods

Coloured materials

Coloured erasers should be avoided as coloured residues may become trapped and will be visible at the surface of the paper.

Abrasive materials

The abrasive particles in some erasers have a very harsh mechanical action on most papers, resulting in rough raised surfaces or thinning in more extreme cases.

Sticky materials

Some products (e.g. Groom/Stick) work on the principle of lifting rather than rubbing dirt away. These are too sticky for general use but may be effective in specific circumstances, e.g. to lift particles off paper that may smudge with rubbing or brushing. Unfortunately paper fibres at the surface and image particles may also be lifted off, especially if the erasing compound is left in contact with the artifact for any length of time. Soft-textured papers are especially vulnerable.

Hard, smooth plastic erasers

Erasers designed for removing lines on plastic film should not be used on paper because they may smooth or burnish

a paper surface rather than erasing dirt. Some of these erasers release an erasing fluid when rubbed against tracing paper or drafting film. If in doubt, test erasers in an inconspicuous area of the artifact prior to use.

Compressed air

Some large libraries use compressed air blown through a hose and nozzle to remove accumulated dust from books. This is not a satisfactory cleaning method; it forces dust into the general work area and much of the dust can resettle on the shelves even if the room is equipped with an air extraction system. Compressed air also forces particles of dust and dirt into protected areas of books, such as slipcovers and spines.

Work Methods

Whenever possible, wear white cotton gloves to handle paper objects. When this is not practical (e.g. when carrying out cleaning procedures), always work with clean hands; periodic washing may be necessary as work progresses. [This is required because paper artifacts will absorb the natural oils, salts, and acids on skin; the oils transferred to paper cannot be removed by surface cleaning, and the organic acids and salts hasten deterioration in local areas.] Paper or card should be used to protect areas not undergoing treatment, particularly where the object must be weighted with the hand to prevent slippage.

Work on a clean flat surface. Use a clean sheet of paper, such as blotting paper, beneath the object. If both sides of an artifact are to be cleaned, do the front first; then transfer it, face-down, to a surface free of erasing particles and clean the back. This procedure avoids smudging dirt particles on the face of the work.

Weight the object during cleaning. Smaller objects can be held down with the hand placed on a protective paper or card although the use of weights may be preferred, particularly with larger pieces (Figure 3). Crumpling can occur if the object slips because it is not weighted. In addition, dirt and erasing particles can become trapped between the object and the work surface, where they can cause damage to the paper or the image as cleaning proceeds. Weights can also be used to hold down curling edges during treatment, or to prevent loose or detached fragments from becoming separated from the object. Do not use weights covered with materials from which colour may transfer, or weights with exposed metal (e.g. lead) that can mark paper. Protect the artifact by placing a piece of paper or card under the weight.

Brush away erasing residues frequently, using a soft brush. When the paper underneath the artifact becomes dirty, discard it and replace it with clean paper. A large draftsman's brush (20–25 cm) can be used periodically to keep the work area free of loose dirt and erasing particles.

Always work toward the edges, away from the point where the paper is held, in order to prevent crumpling and tearing. Be especially cautious when working close to edges and tears. A stroking action in one direction only (toward the edge) will prevent accidental damage.

Work systematically over the entire surface to avoid an uneven appearance after cleaning. Pieces that are particularly dirty may require several applications. It is preferable to go over an area repeatedly with a gentle erasing action rather than once vigorously. Overall cleaning will likely be more even, and the risk of abrasion of the surface will be minimized.

To protect tears from damage during cleaning, insert a piece of paper between the edges of the tear where they meet, exposing first one side to cleaning and then the other (Figure 4).

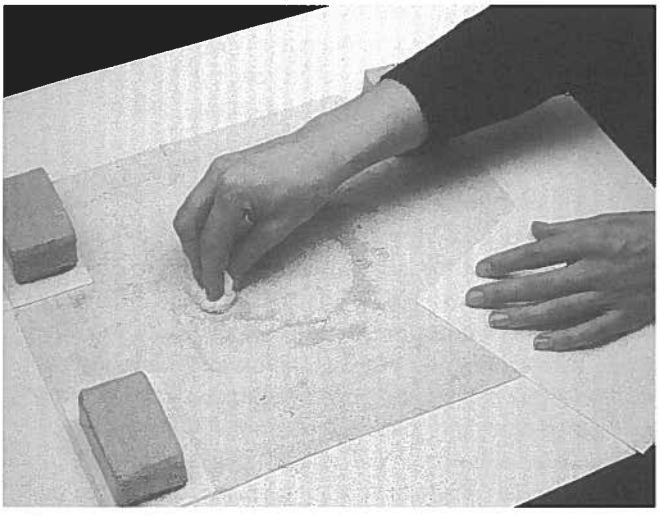

Figure 3. Weights can be used to hold down paper objects during cleaning.

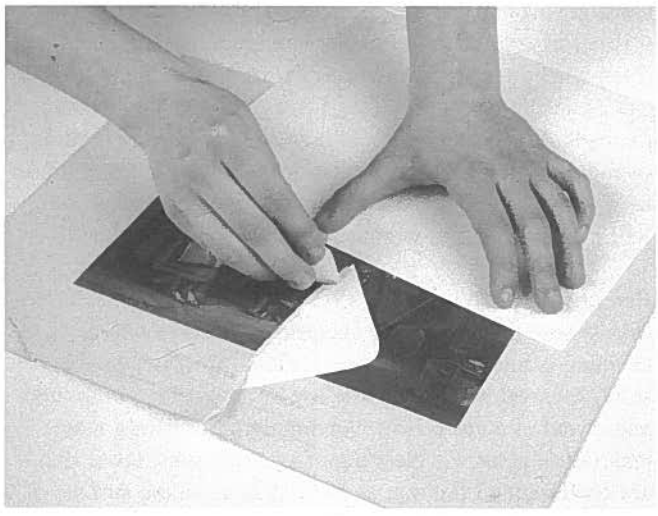

Figure 4. Tears can be protected during cleaning by inserting a piece of paper between the edges.

Inscriptions, numbers, and significant marks or notations must not be removed without permission of the owner or custodian of the object. To facilitate cleaning around these markings, use a draftsman's erasing shield. This will permit erasure close to lines, leave a tidy edge, and reduce the danger of erasing parts of the inscription.

Paper artifacts may have been repaired or mounted with pressure-sensitive tape (e.g. Scotch or masking tape) or with gummed tape (e.g. linen or brown Kraft paper tape). These areas should be masked with paper or plastic film to avoid the accumulation of dirt and erasing particles along raised or sticky edges.

Works of Art on Paper

To raise awareness of the potential problems associated with surface cleaning, some of the pertinent characteristics of specific types of artifacts are presented in the next sections, along with advice to deal with the problems. Keep in mind that surface cleaning requires identification of the medium and careful examination of the condition of the paper and the medium. It may be necessary to test the effect of the surface cleaning compound in a small inconspicuous area to determine whether or not it is safe. Surface cleaning should generally begin with removal of loose dust and dirt using a soft brush and, if necessary, continue with more aggressive forms of surface cleaning using an erasing compound or eraser.

Drawings and paintings

Graphite and coloured pencil
No form of erasure can be used safely directly over graphite (commonly referred to as 'lead') or coloured pencil areas. Soft pencil is particularly delicate and smudges easily; coloured pencil is less susceptible. Cleaning around the image should be carried out only if it is possible to do so without creating an uneven effect. Even when non-image areas on the front of a drawing can be surface cleaned safely, it may be impossible to do the back. Some graphite drawings and sketches exhibit an overall veil of graphite, and it is usually best to leave these untouched. In many cases the artist's drawing technique will make cleaning a work impossible.

Pen and ink
Inks should be tested in an inconspicuous area before cleaning is undertaken. Some pen and ink drawings can be safely cleaned with the gentle use of an erasing compound and a wad of cotton. However smudging or lifting may result during surface cleaning of granular inks, those that are cracking and flaking, or those that sit on the surface of the paper rather than being integrated into it. Brush the ink lightly to remove loose dust and dirt, and test with erasing compound on an inconspicuous spot.

Some inks (iron gall ink in particular) can be highly acidic and they cause paper to deteriorate, sometimes to the point of perforation. Before this point is reached the paper may appear to be sound but is, in fact, susceptible to damage.

All inked areas should be examined for weakness as they may not withstand surface cleaning.

Charcoal, pastel, and chalk
These drawings consist of powdery materials containing little or no binding medium. Unless they have been treated with a fixative, they will be extremely delicate and must be handled as little as possible. Jarring or direct contact with the image can cause smearing or loss of particles from the surface. Do not store, display, or treat these media on or near Plexiglas or Mylar, which build up an electrostatic charge strong enough to attract loosely bound particles from a work. To clean light loose dirt, remove the brush from a photographer's blower brush and direct puffs of air toward the affected areas (dirt may be dislodged in this manner only if loosely bound particles are not lifted at the same time). Margins may be cleaned with erasing compounds, but no attempt should be made to erase surface dirt in the image area. Unless a drawing has been treated with a fixative, it should not be placed face-down to clean the back as the image will smudge and transfer to the work surface.

To check for image transfer, press a small piece of blotting or filter paper lightly on an inconspicuous area of the drawing, or gently roll a cotton swab over a small area of the image. If there is no transfer, it may be possible to clean the back with a very gentle and light application of erasing compound (but be sure that the drawing does not move during cleaning). Do not attempt to clean the image, even if it has been fixed.

Wax crayon
Clean around colour areas. Avoid surface cleaning the image with erasing compounds as they may pick up colour. Vigorous cleaning of the back of wax crayon drawings may result in the image offsetting onto the work surface.

Watercolour, gouache, and poster colour
Aqueous media are very delicate, so avoid cleaning colour areas with surface cleaning compounds. In some circumstances image areas may be lightly brushed to remove any loose surface dust or dirt. As watercolour papers are often made with a pronounced texture, paint on the raised parts of the surface can be inadvertently abraded when an effort is made to reach dirt in the depressions. When erasing in unpainted areas or on the back of these media, take care not to flatten any texture in the paper. In watercolours that have been painted over preliminary graphite drawings, take care to avoid cleaning over exposed graphite lines.

Gouache is used either on its own, or in conjunction with watercolour to heighten elements in the design. The paint layer is generally heavier and more opaque than watercolour. Erasure will disturb the surface and may pick up colour. Gentle brushing can result in paint loss if the gouache is cracking and flaking. Handling of paintings with this problem should be kept to a minimum.

Works executed in poster colour tend to be dry because they have a minimum of binding medium. Surface cleaning with erasing compounds may cause smearing and loss of surface colour; it can also polish a matte paint surface. In some cases, light brushing to remove any loose surface dust or dirt may be possible.

Drawings that have been tightly stretched on wooden frames or strainers should not be surface cleaned. They are already under tension, and the slightest application of pressure can split the paper if it is in a deteriorated state.

Prints

Prints include linocuts, woodcuts, wood engravings, steel and copper engravings, etchings, lithographs, and silk-screen prints.

Black-and-white prints
Some (but not all) black-and-white prints can be surface cleaned successfully with erasing compounds, so all inks should be carefully tested before proceeding. Some heavy inks sit in a raised line on the paper and can cause problems during cleaning: a wad of cotton used with cleaning compound could catch on the ink, or an eraser could flatten the line. Some raised lines are actually deformations in the paper itself and are formed during the printing process. In extreme cases these lines may be apparent on the back in the form of depressions corresponding to the image design. In such instances a soft brush will circulate loose cleaning compound more safely than would a cotton ball. Care must also be taken when cleaning the back of prints with textured surfaces as details may be inadvertently crushed.

Some prints have a plate mark where the paper has been forced around the edges of a metal plate during printing. Care must be taken when erasing (on either the front or the back) not to flatten the plate mark or to break the paper along the plate mark where the fibres have been bent and weakened. Similar care must be taken with prints where intentional distortion or embossing of the paper is an integral part of the work.

India proofs (often called chine applique or chine collé) are usually engravings on very thin fine paper that is supported on a larger heavier piece of paper. The two sheets, run through the press at the same time, are held together only by compression of the fibres; no adhesive is used. Erasure can be used on the support paper in the margin areas and on the back, but the fine paper and the printed image may be too delicate for cleaning. Careful testing will indicate whether or not a light application of cleaning compound is possible.

Colour prints
Depending on the characteristics of the ink, areas of printed colour may be abraded or burnished by erasing compounds. Therefore clean around printed areas. Broad flat areas of solid colour will show damage before other areas. The precautions outlined for cleaning black-and-white prints also apply to colour prints.

Hand-coloured prints
Hand-applied watercolour is often used to tint black-and-white or coloured prints. Do not use surface cleaning compounds to clean the image areas of hand-coloured prints as erasing materials can pick up colour from the delicate washes.

Archival Materials

Archival materials on paper are often brittle, torn, or fragmented. This deterioration is caused largely by the high levels of acidity that result from the poor-quality materials used in their manufacture. Poor storage conditions and handling techniques also contribute to the deteriorated state of these materials, which must be handled and cleaned with great care.

Manuscripts and documents

The general suggestions and precautions outlined for prints and drawings are also applicable to manuscripts and documents.

A single document may contain several types of ink in the text, signatures, and identification stamps. Each ink must be checked for stability prior to surface cleaning. Acidic iron gall ink (once used extensively for writing) may weaken and eventually destroy the paper. Be sure that the paper is strong enough in inked areas to withstand cleaning by brushing or erasing compounds. Heavy inking found in broad areas (e.g. on music manuscripts) may be powdery or flaking; avoid dislodging such inks. The ink used on carbon copies is prone to smudging and the paper tends to be thin and brittle, making handling difficult and surface cleaning inadvisable. Decorative or illustrated areas on illuminated manuscripts are drawn with water-based paints that may be dry and powdery. Leaf-gilding in gold or silver may be flaking or lifting. No form of surface cleaning should be attempted in any of these areas.

Embossed stamps are found on many archival documents. It may be possible to apply surface cleaning compound to these using a soft brush, but

more vigorous treatment should be avoided. Application of stamps forces the paper to deform drastically; the sharper the edges of the embossed stamp, the weaker the paper will be. Pressure from an eraser passing over such a stamp may lift all or part of it, or crush raised areas. Some embossed stamps are adhered to rather than stamped into the document. When cleaning around these stamps, avoid getting eraser particles or cleaning compound underneath them.

Parchment and vellum

Any of the methods described for paper may be applied to both sides of parchment and vellum documents. If these are folded but still supple it may be possible to open them up for cleaning, but if they are dry and brittle they may crack along the folds as they are opened. If they have been wet at any time they are more likely to be brittle. Do not attempt to unfold hardened documents. Erasure in brittle areas may result in fragmentation.

Many documents made from parchment or vellum are distorted and may be stretched or raised in some areas. When surface cleaning such documents, be careful not to flatten these areas against the work surface as this could permanently crease the edges. Place padding such as a wad of cotton behind these areas to support them while gently cleaning the surface. Beware of flaking inks and paints.

Large archival materials

Large archival materials include posters, architectural drawings, and maps.

Do not use erasing materials on posters except in areas without printed colour. If a shiny coated paper has been used, erasure will not be possible. The surface of printed areas of colour and the gloss of coated paper can easily be marred by cleaning compounds. To clean large non-image areas (e.g. the back, or margins on the front), use loose cleaning compound and a wad of cotton. Erasers may also be required.

Avoid erasing over pencil lines in architectural plans and drawings. Hand-colouring is too delicate to withstand any treatment. In drawings that have been executed on linen, loose dirt can be brushed off but erasure should not be attempted. Dirt embedded in the fillers in the fabric will not respond to surface cleaning. The use of erasers on linen can pull the weave, causing distortions. Plans executed on tracing paper may be very brittle. Blueprints on paper with a waxy surface are prone to smudging.

Be cautious when cleaning maps with hand-coloured areas as it may not be possible to surface clean these areas with erasing compounds. Use cleaning compound to treat large areas of maps in sound condition. Larger maps have often been printed on several sheets of paper pasted together at the edges to provide a larger printing area. When surface cleaning these, take note of the joins and observe their condition. Loose sections along these edges are easily torn or creased and may trap erasing particles.

Many maps are mounted on linen or cotton fabric using starch paste or other adhesive. These backings can hold loose dirt and dust, particularly when the map has been stored in poor conditions. Remove as much loose dirt as possible from these maps by vacuuming the back with a nozzle and filter as described previously. To clean large areas, vacuum through a piece of woven screen placed over the surface of the artifact. Avoid vacuuming the front of these artifacts as the risk of dislodging loose pieces is too great. When vacuuming on the back near edges, tears, or holes, be careful not to draw fragments around from the front of the artifact. Some of the dirt and dust may be worked loose with a stiff brush prior to vacuuming. It will not be possible to remove all of the dirt as much of it will be embedded in the weave of the fabric.

Many maps have a protective coating of varnish that is frequently shellac. This coating becomes yellowed and embrittled with age and tends to crack and flake. If a map has been stored rolled, the shellac may crack as it is unrolled; cleaning compound and dust can then become trapped in these cracks. If the object is backed and there are tears or losses, cleaning compound may collect between the map and the backing. If wads of cotton are used, they may catch on the edges of the cracked shellac and pull it up, resulting in skinning of the paper surface. Only a soft brush used carefully to clean away loose dirt will be safe and effective. Because of the disfiguring effects of darkened varnish, efforts to surface clean will have little visible result.

Bound archival materials

Remove books from the top shelf first, progressing toward the bottom shelf. In doing so any dust that falls will land on books that have not yet been cleaned. Books should be cleaned individually. Begin by holding the book closed with the spine upright, then tilting the book slightly so that the fore edge is lower than the spine; in this way any dust will fall off the book rather than into the spine area or between the pages. Clean the head (top) of the book first as it will be the dustiest part. Hold the book firmly shut and brush the dust away from the spine toward the fore edge (Figure 5). Brushing the dust toward a vacuum cleaner fitted with a HEPA filter will help keep the dust from becoming airborne, affecting other books and the work environment. Alternatively, use an appropriate vacuum brush attachment (Figure 6); do not apply the nozzle directly to the book. If necessary, wipe the front and back covers and the spine with a dusting cloth.

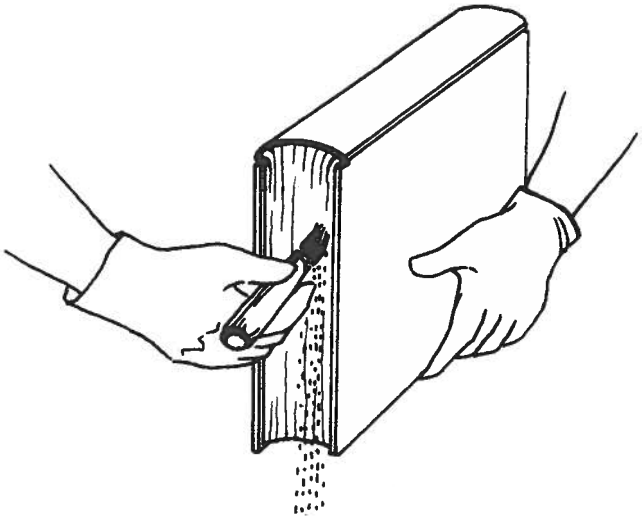

Figure 5. Dust should be brushed away from the binding.

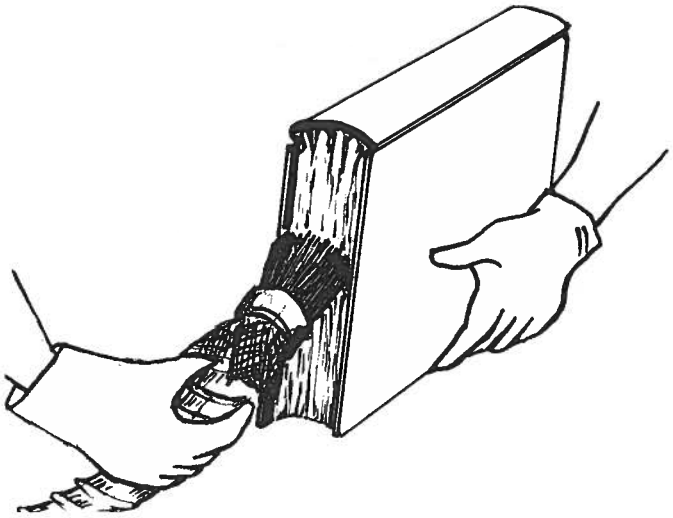

Figure 6. A vacuum cleaner brush can be used to remove dust.

Give special attention to areas where dirt and dust might have become trapped, e.g. if a book is warped or its leaves distorted, dust may have sifted down between the pages. Check pockets and folded maps or charts for collected dust.

Bindings in good condition can be successfully surface cleaned. If full conservation work is to be undertaken, the book is normally dismantled and the pages surface cleaned individually. Cleaning can, however, be done without dismantling if care is taken to prevent cleaning compound from collecting along the sewn or glued inner margin. Clean from the centre of the page toward the outside edges. A thin card support inserted below the page being surface cleaned may assist in the procedure. Fragile books must be opened carefully to avoid exerting pressure on the spine, which could cause brittle paper or leather to snap or deteriorated binding threads to break. As books are stored closed and tend to collect dirt only when opened for use, it may not be necessary to surface clean all the pages.

Ground-in handling grime located along page edges and corners (which results from the turning of pages) cannot usually be removed with erasers.

Before cleaning artifacts that are not fully bound or that may be in fragmentary condition, it is wise to number the pages lightly with an HB pencil. This allows pages to be returned to their proper place if they fall out or are removed for cleaning, and is especially important for scrapbooks, albums, or pamphlets which are often in poor condition.

Vacuum and clean shelves before returning bound archival material.

Suppliers

Brushes:
local art stores, hardware stores, conservation suppliers

Cheesecloth, fibreglass screen:
local hardware stores

Erasers/drafting shield:
local art supply stores, conservation suppliers

Dust Bunny dusting cloths:
University Products of Canada
Division of BFB Sales Ltd.
6535 Millcreek Drive, Unit # 8
Mississauga ON L5N 2M2
tel.: (905) 858-7888 or 1-800-667-2632
fax: (905) 858-8586
e-mail: bfbsales@aol.com

R. Bury Media Supplies Ltd.
#10 3771 North Fraser Way
Burnaby BC V5J 5G5
tel.: (604) 431-1964/5
fax: (604) 431-1930
e-mail: info@rbury.com

Vacuum cleaner fitted with HEPA filter:
local department stores

Nilfisk-Advance Canada Company
396 Watline Avenue
Mississauga ON L4Z 1X2
tel: 1-800-668-8400
Web site: www.nilfisk-advance.com

Carr McLean Limited
461 Horner Avenue
Toronto ON M8W 4X2
tel.: (416) 252-3371 or 1-800-268-2123
fax: (416) 252-9203 or 1-800-871-2397
e-mail: cmclean@carrmclean.ca

University Products of Canada
(see address above)

Mini-tool vacuum cleaner attachments:
local computer stores or conservation suppliers

Nilfisk-Advance Canada Company
(see address above)

Staedtler Mars Plastic and Eberhard-Faber Magic Rub 1954 eraser crumbs:
William Minter Bookbinding & Conservation, Inc.
RD # 1, Box 99
Woodbury PA 16695-9516
USA
tel.: (814) 793-4020
fax: (814) 793-4045
e-mail: wmntr@aol.com

Woolfitt's Art Enterprises Inc.
1153 Queen Street West
Toronto ON M6J 1J4
tel.: (416) 536-7878 or 1-800-490-3567

Acknowledgements

The authors thank colleagues from CCI's Works on Paper Laboratory. Thanks also to scientists from CCI's Analytical Research Laboratory for analytical work on erasing materials.

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Notes