



Emergency Treatment of Water- Damaged Paintings on Canvas

In the event of an emergency, call a conservator as soon as possible. Survey the affected area, and undertake procedures to prevent further damage.

Introduction

Water damage is one of the most serious types of damage that can occur to a collection of paintings on canvas. It is usually the result of flood, broken water pipes or efforts to extinguish a fire. Since the most serious effects from exposure to water usually occur within the first 5 to 15 minutes, every possible precaution should be taken to reduce the risk of exposure. The potential for seasonal flooding or water leakage in the facilities should be evaluated, paintings in storage should be protected by plastic sheets placed between the storage racks and the ceiling, and storage racks should be raised at least 150 mm above the floor in case of flooding.

The following information will be useful for disaster planning and emergency preparedness, as well as for mitigating the immediate effects of water damage.

The Effects of Water Damage

Paintings are composed of diverse materials, which react to moisture in a variety of ways. Wooden frames swell and exert pressure on the painting's

stretcher. The wooden stretcher also swells and may warp, possibly causing distortions and tears in the canvas. In addition, canvas supports can shrink dramatically when wet, causing the paint and ground layers to crack, buckle and flake off.

It is important to halt the shrinkage of water-damaged paintings through immediate controlled drying. Since water-damaged paintings are likely to be in an extremely vulnerable state, **the assistance of a conservator should be sought at once.** However, if expert assistance is not available, the emergency procedures outlined in this Note can be performed by non-conservators.

Removing Excess Water

The most immediate priority is to remove excess water from the paintings. Lift each painting and tilt it to allow water to drain from one corner of the frame. If a number of paintings are involved, it is important to establish a system of priorities; not all paintings react equally to water:

- First, attention should be directed to the paintings of greatest value to the collection. (These should be identified ahead of time in a disaster plan.)

- Next, attention should be given to the paintings that are showing the least effect from the water or those that are only slightly damaged.
- Finally, paintings that are already badly damaged and that will require prolonged attention should be dealt with.

After the excess water has been removed from the paintings, dehumidifiers can be used to assist the drying process. Maintain the environment between 60% and 70% relative humidity (RH) to avoid overdrying the paintings.

Materials

The following materials should be kept on hand:

- large quantity of white blotting paper (100% cotton fibre, acid-free, widest size available)
- tissue or clean newsprint
- rigid board such as plywood or hardboard that can be cut to fit the inside dimensions of each stretcher
- large fans
- worktables
- weights (e.g., bricks, heavy books, bleach bottles filled with water)
- large blankets to pad tables
- Mylar (0.5 mil thick) or plastic sheeting

Preparing a Work Area

If possible, work in an area that is isolated from the collection and not affected by water damage. Place large fans in the work area; increased air circulation discourages the growth of mould. Fans will also accelerate the drying process; they should be run 24 hours a day until the paintings are dry.

Prepare a clean, dry, padded surface. Several sheets of blotting paper are sufficient to pad paintings with a flat paint surface. Paintings with impasto (raised paint) require extra padding, such as blankets. The extra padding should be twice the thickness of the greatest paint projection.

Cover the padding layers with thin Mylar or plastic to prevent them from becoming damp. This preventive measure minimizes the potential for mould growth and eliminates the possibility of dirt or dye transferring from the padding.

Drying Water-Damaged Paintings

Important: The drying procedure outlined below may not entirely apply in three cases:

- If water-damaged paintings are flaking, they must not be weighted as described below. Paintings with signs of flaking, lifting or curling paint layers, or softened or dissolved paint or ground layers should be placed face up on a table and allowed to dry untouched.
- If tears are present in the painting, it may not be possible to flatten them according to the procedure. To avoid the possibility of creasing the canvas, do not weight severely distorted tears that cannot be easily and safely flattened.
- Paintings with high (over 1 cm) or fragile peaks of impasto may require additional precautions or may not be suitable for drying face down. For paintings with stable impasto, extra padding in the form of several layers of blankets, felt or cushion material will be required to provide extra support to the paint surface.

Paintings that are not flaking, torn or softened as described above should be dried and flattened by means of the procedure outlined below (Figure 1).

Place several layers of blotting paper (or in the case of very large paintings, a cotton sheet or absorbent blanket) over the plastic-covered, padded surface described above, then place two layers of tissue paper (or newsprint) on top.

Ensure that padding and tissue are perfectly flat and uncreased: wrinkles in the padding material can transfer to the painting's surface when the painting is subjected to pressure.

Take the painting out of its frame and place the painting face down on the clean, padded surface. Remove backing boards and hanging wire that might restrict access to the back of the painting.

Cut blotting paper to fit the inside dimensions of the stretcher frame. If there are keys in the corners of the stretcher frame, slip the blotting paper under them. Cover the entire canvas back with blotting paper. If it is necessary to use more than one piece, place sheets edge-to-edge. Do not overlap the sheets, because the resulting line of double thickness can deform the paint surface.

Cut a board, preferably plywood or hardboard, to fit the inside dimensions of the stretcher frame. Place it on top of the blotting paper to hold the canvas flat during drying. If there are keys in the corners on the stretcher frame, cut the corners of the board diagonally to fit. Do not attempt to force the board under the keys.

Place a number of weights on each board to help keep the canvas from distorting during drying. The amount of weight required will vary from one painting to the next. Place weights such that they are distributed evenly over the board. Weights should also be placed on the stretcher corners to reduce warping. Keep paintings being treated under surveillance to detect warping.

Change the blotting paper under the boards and weights every 10 minutes until the blotting paper is almost dry. Then change it every 30 minutes, or until it is dry to the touch. Shift work during this crucial procedure may be necessary to maintain dry blotters.

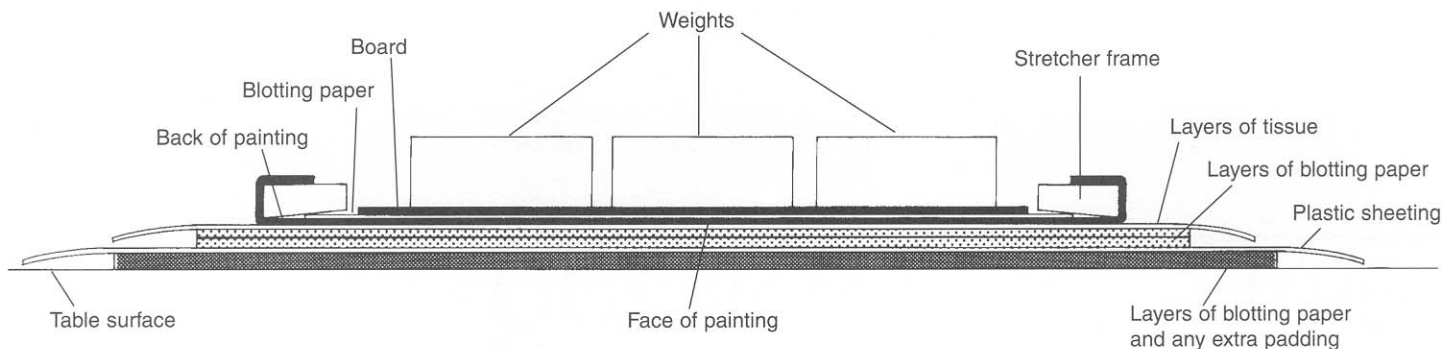


Figure 1. Cross-sectional view of method for drying a water-damaged painting.

When the canvas seems dry, place dry blotting paper under the boards and weights and leave for 24 hours, maintaining sufficient air circulation with fans.

Note: If, after drying, the tissue or newsprint on which the painting has been resting face down does not separate from the paint surface, leave it in place. It should be removed by a paintings conservator.

As soon as possible, arrange to have a paintings conservator inspect the damaged paintings to assess the extent of damage, to deal with possible mould growth and to advise about treatment. The affected storage or exhibition area should be cleaned and disinfected before the paintings are returned. Contact the Canadian Conservation Institute if further advice is required.

Conclusion

In any group, the measures described above will be appropriate only for a limited number of paintings that have undergone extensive water damage. Many will be in extremely fragile condition with severe damage.

Water has a devastating effect on paintings on canvas. It is crucial that the possibility of exposure to water be studied, and that all possible steps be taken in advance to ensure that this type of disaster does not occur.

Suppliers

Blotting paper:

100% cotton fibre, acid-free, widest size available sold by local paper distributors, art supply stores or stationery stores.

RH monitors:

Simple hygrometers are available at most hardware stores. Thermohygrographs and psychrometers are available from scientific equipment suppliers or from conservation supply firms. Environmental monitoring equipment is also available on loan from CCI (see CCI Notes 2/4).

Tissue:

Aldex #13, Silkspan Gm, wet-strength absorbent, long-fibre paper made of manila hemp and other pure cellulose fibres, is available from the manufacturer:

Aldine Paper Co.
315 Park Avenue South
New York, NY 10010
USA
Toll-free: (800) 221-3043

Thin Japanese paper or commercially available wrapping tissue (non-coloured) may be substituted.

Blank newsprint:

newspaper offices or art supply stores

Polyethylene sheeting:

hardware stores or paint distributors

Mylar (0.5 mil thick):

art supply stores or plastics suppliers

Note: To obtain names of local distributors, contact the manufacturer:

Dupont Canada Inc.
Packaging Division
P.O. Box 2200
Streetsville Postal Station
Mississauga, ON L5M 2H3
Tel.: (905) 821-5612

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