



---

# Conserve O Gram

---

July 1993

Number 3/5

## Volcanic Ash: Cleaning Museum Objects

The eruptions of volcanoes, such as Mount Saint Helens, that release large quantities of ash in the atmosphere can create unusual cleaning problems for museums. Volcanoes that are known to be active and emit ash are found in the northwestern United States, including Alaska. Certain precautions must be taken when removing the ash from museum objects and historic buildings because of its abrasive nature.

Volcanic ash is a very fine, gritty substance, very much like tiny glass splinters. Since no weathering has taken place, the fragments, no matter how small, are very sharp. The size of the particles depends on the density and intensity of the eruption. Park museums closest to a volcano receive larger particles than park museums that are farther away.

When rubbed against a smooth surface, volcanic ash acts like fine sandpaper. The ash will scratch glass, furniture and metallic surfaces; it can also harm paper and textile materials.

No noticeable acidity or alkalinity was detected in ash from Mount Saint Helens in a pH test. The ash was found to be insoluble in water and other solvents. When water was mixed with ash and then allowed to dry, the ash residue tended to harden into a cement-like substance.

### *General Recommendations*

During an ash eruption, museum buildings should be closed to the public. All windows, doors, and vents on exterior walls should be sealed to make the building as air-tight as possible, thus limiting the amount of ash entering the building. Buildings should stay

closed until the threat of ash fall is minimal. People coming into the building during an ash eruption will bring ash in with them. Even after the ash has settled, the problem of people bringing it into the building on their shoes remains. When the building reopens, floors should be covered to catch the ash brought in by shoes. Mats should be placed at all entrances to remove as much of the ash as possible. These mats should be vacuumed frequently to avoid ash buildup and tracking into the building.

No attempts should be made to brush the highly abrasive ash off of any museum objects or sweep it off the floor. The ash should be removed by vacuuming. A conventional vacuum cleaner may be used, but it is possible that the fine ash might penetrate the filter bag, get into the motor, or be exhausted back into the room. A vacuum cleaner using a high-efficiency particulate air (HEPA) filter or a water filtering system will not have this problem. Change the bags and clean the filters often. If the water type vacuum cleaner is used, the water should be changed frequently to prevent ash buildup in the filter.

More damage will result from cleaning an object several times than from the ash merely lying on the surface. Normally, no chemical reaction should occur between the ash and the object if the ash is removed in a timely manner. The museum staff should look carefully at the exposed objects covered with ash to decide what objects are most susceptible to damage. Rooms polluted by the ash fall should be cleaned as well as the museum objects in them. Cleaning should be done from the top of the room down, using a vacuum cleaner, taking care to stir up as little ash as possible in the course of moving around the area.

---

Contaminated objects should be removed from the room if possible and cleaned in an uncontaminated area not affected by the ash. High-value fine art objects and objects in fragile condition should be examined and treated by a trained conservator. Once objects are cleaned, they should be stored in a dust-free storage area until the areas affected by ash have been thoroughly cleaned and the danger of repeated ash eruption is over.

Museum objects should be vacuumed using a brush attachment and suction that can be varied. A rheostat attachment is available that reduces the suction by restricting the flow of electricity to the vacuum cleaner. Use no more suction than necessary to pick up the ash. A plastic mesh screen, such as that available in hardware stores for screen doors, with edges bound in cotton twill tape or masking tape, should be held over the object while vacuuming to eliminate strain on the object. This screen should always be used with textiles, paper, and upholstered furniture. Before vacuuming any object, be sure to check for loose or delicate parts.

### ***Furniture***

The first step is to vacuum the object using a brush attachment. Do not rub or move the brush back and forth but instead set the brush gently down over the ash, allowing the vacuum to suck up the ash.

After vacuuming, a thin film of ash may be left in the furniture's finish. If the finish is dry, flaking, or unstable in any way, stop cleaning. To test the stability of the finish, blot Stoddard solvent in a small unnoticeable area. If the solvent removes the finish, it is not stable enough to continue cleaning.

To remove the ash residue from furniture that has been waxed, dampen a soft cloth with Stoddard solvent and blot off the residue. Follow with a dry cloth and wipe the surface clean. The furniture will need to be rewaxed,

using a hard wax such as Butchers® or Staples™ wax.

Upholstered furniture should also be vacuumed. Use the plastic mesh screen and hold the screen over the fabric to relieve the strain.

### ***Metal***

Follow the same vacuuming procedure as with the furniture. Metal objects that have been waxed can be cleaned with Stoddard solvent and then rewaxed. Sensitive metal objects, such as firearms and fine art pieces, should only be vacuumed.

### ***Glass and Ceramics***

These objects should be vacuumed using the above procedure. Care must be taken not to rub the brush against the object.

### ***Paintings***

Since most paintings are hanging, less ash will be deposited on their surface. Do not attempt to vacuum any paintings! Dusting paintings can be very risky under any circumstances. It is best to contact the nearest painting conservator for assistance if ash is a problem.

### ***Textiles***

Textiles should be vacuumed carefully, using an upholstery brush attachment and plastic mesh screen. Test first to determine if any of the textile fibers are loose. Turn the suction down to the lowest possible effective level. Carefully vacuum a small section of the fabric, holding the mesh screen over the textile to eliminate strain. Check the surface to see if any loose ends are visible. If not, continue to vacuum the rest of the object.

Do not attempt to vacuum fragile textiles. These textiles should be put in dust-free storage and cleaned by a textile conservator.

### ***Paper***

Vacuum only stable paper objects, using the same procedure recommended for textiles. Unstable or fragile paper items should be put in dust-free storage and cleaned by a paper conservator.

Diana R. Pardue  
Chief, Museum Services Division  
Statue of Liberty NM  
National Park Service  
New York, New York 10004

*Formerly issued as Conserve O Gram 3/11. Revised 1993.*

---

---

The *Conserve O Gram* series is published as a reference on collections management and curatorial issues. Mention of a product, a manufacturer, or a supplier by name in this publication does not constitute an endorsement of that product or supplier by the National Park Service. Sources named are not all inclusive. It is suggested that readers also seek alternative product and vendor information in order to assess the full range of available supplies and equipment.

The series is distributed to all NPS units and is available to non-NPS institutions and interested individuals by subscription through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, FAX (202) 512-2233. For further information and guidance concerning any of the topics or procedures addressed in the series, contact the National Park Service, Curatorial Services Division, Harpers Ferry, WV 25425, (304) 535-6410.