



Conserve O Gram

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Disposal Of Cellulose Nitrate Film

Introduction

Cellulose nitrate (“nitrate”) film was manufactured from about 1910-1950 for use as a non-breakable, lightweight alternative to glass plate photographic negatives. It was also used as a motion picture film medium. Unfortunately, **nitrate film is a severe fire safety hazard**. Once burning, a nitrate film fire is very difficult to extinguish. Such fires release numerous toxic gases. Even when not on fire, deteriorating nitrate film is hazardous. As it breaks down, nitrate releases noxious gases that can be dangerous to both people and other collections.

To slow down the deterioration process and protect other collections, museum staff routinely store original nitrate film in dedicated freezers, refrigerators, or cold storage vaults. However, in accordance with Director’s Order #58: Structural Fire Management, nitrate film in NPS collections must be housed according to the standards prescribed by the National Fire Protection Association (NFPA), most notably *NFPA 40: Standard for the Storage and Handling of Cellulose Nitrate Film*, as well as according to any relevant state and local regulations.

In addition to other requirements, *NFPA 40* specifies that:

- Nitrate film collections in excess of 25 lbs. must be stored in approved cabinets or vaults.

- Nitrate film storage cabinets with a capacity of 50 lbs. or more must be vented to the outside of the building.
- Nitrate film storage cabinets with a capacity of 75 lbs. or more must be equipped with at least one automatic fire sprinkler head.
- Nitrate film collections in excess of 750 lbs. must be stored in approved vaults.
- New vaults must be equipped with a wet pipe fire suppression system.

These are but a few of the many requirements listed in *NFPA 40*. Compliance with this standard can be very expensive. You must consider all potential costs. These include: new construction and renovation, as well as recurring expenses associated with maintenance, operations, staffing, and monitoring.

The Solution

The four-step solution to eliminate these safety, image permanence, and storage issues is:

1. **Identification:** Identify nitrate film in your collection using the techniques described in *Conserve O Gram* 14/9 “Identification of Film Base Photographic Materials.”
2. **Reformatting:** Reformat (copy) all nitrate film in your collection onto modern polyester-based film. Polyester photographic

film is safe, durable, and stable. Several contractors provide reformatting services for institutions that possess nitrate still and motion picture film. (See “Reformatting Contractors” below; also see *Conserve O Gram* 19/10 “Reformatting for Preservation and Access: Prioritizing Materials for Duplication.”)

- 3. Quality Control:** After your film has been reformatted, conduct a quality control inspection of the copies (see *Conserve O Gram* 19/13 “Preservation Reformatting: Inspection of Copy Photographs”). The NPS Museum Management Program (MMP) utilizes the quality control criteria developed by the National Archives and Records Administration (NARA). Contact the MMP for more information.
- 4. Disposal:** Once you have reformatted your original nitrate film (and have conducted your quality control inspection of the copies), properly dispose of the original nitrates (see below).

Note: Do not destroy original nitrate film with unique and important artifactual, intrinsic, informational, or evidential value (original negatives produced by Ansel Adams, images from Eleanor Roosevelt’s collection, legal evidence, etc.). For additional information about these terms, see *Museum Handbook*, Part II: Museum Records, Appendix D: Museum Archives and Manuscript Collections.

The vast majority of NPS nitrate collections do not fall within these categories. Consult with your SO/regional curator and refer to the *Museum Handbook*, Part I, Appendix M: Management of Cellulose Nitrate and Cellulose Ester Film, for addi-

tional information.

Disposal of Nitrate

Because of its flammability, nitrate film is classified by the U.S. Department of Transportation as a hazardous material (HAZMAT). All hazardous materials offered for disposal are considered hazardous waste. Such materials are subject to various Federal, State, and local regulations. To dispose of nitrate film properly, contact your park’s HAZMAT/hazardous waste coordinator (who is probably a facility management employee). Your HAZMAT coordinator can help you to arrange for proper disposal using the services of a local hazardous waste collection and disposal firm. You can also contact your regional HAZMAT coordinator, county waste office, or State hazardous waste office for assistance. For a contact list of various state hazardous waste offices, refer to the EPA website at: <<http://www.epa.gov/epaoswer/osw/stateweb.htm>>

Remember: You **do not** need to deaccession reformatted nitrate prior to disposal. Once you convert an image from nitrate onto modern safety-base film, the safety-base image replaces the nitrate image as the museum object. The nitrate image automatically becomes a disposable copy; you can destroy it without having to first deaccession it. The one exception would be for extremely rare instances where an image’s original nitrate base has unique and important artifactual or intrinsic value.

References

Bennett, Karen L. and Jessica S. Johnson. *Conserve O Gram* 14/9 “Identification of Film Base Photographic Materials.” Washington, DC: National Park Service, 1999. Available

on the web at: <http://www.cr.nps.gov/museum/publications/conserveogram/14-09.pdf>.

Eastman Kodak Company. *Safe Handling, Storage, and Destruction of Nitrate-Based Motion Picture Films*. Rochester, NY: Eastman Kodak Company, 1998. Available on the web at: <http://www.kodak.com/country/US/en/motion/hse/safeHandle1.jhtml#waste>.

Environmental Protection Agency. *Managing Hazardous Waste in Your Community*. Washington, DC: Environmental Protection Agency, 2000. Available on the web at: <http://www.epa.gov/epaoswer/general/manag-hw/e00-001a.pdf>.

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Health and Safety Executive, United Kingdom. *The Dangers of Cellulose Nitrate Film*. Caerphilly, United Kingdom: Health and Safety Executive, 2003. On the web at: <http://www.hse.gov.uk/pubns/cellulose.pdf>.

Knapp, Tony and Diane Vogt-O'Connor. *Conserve O Gram 14/8* "Caring for Cellulose Nitrate Film." Washington, DC: National Park Service, 2004. Available on the web at: <http://www.cr.nps.gov/museum/publications/conserveogram/14-08.pdf>.

National Fire Protection Association. *NFPA 40: Standard for the Storage and Handling of Cellulose Nitrate Film*. Quincy, MA: National Fire Protection Association, 2001.

Vogt-O'Connor, Diane. *Conserve O Gram 19/13* "Preservation Reformatting: Inspection of Copy Photographs." Washington, DC: National Park Service, 1995. Available on the web at: <http://www.cr.nps.gov/museum/publications/conserveogram/19-13.pdf>.

_____. *Conserve O Gram 19/10* "Reformatting for Preservation and Access: Prioritizing Materials for Duplication." Washington, DC: National Park Service, 1995. Available on the web at: <http://www.cr.nps.gov/museum/publications/conserveogram/19-10.pdf>.

_____. "Appendix M: Management of Cellulose Nitrate and Cellulose Ester Film" in *Museum Handbook*, Part I, Museum Collections. Washington, DC: National Park Service, 1999. Available on the web at: <http://www.cr.nps.gov/museum/publications/MHI/AppendM.pdf>.

Websites

Environmental Protection Agency:

1. Hazardous Waste Program: <http://www.epa.gov/epaoswer/osw/hazwaste.htm>.
2. Contact list of state hazardous waste offices: <http://www.epa.gov/epaoswer/osw/stateweb.htm>.
3. RCRA Online, The Resource Conservation and Recovery Act of 1976 (RCRA): <http://www.epa.gov/rcraonline>.

U. S. Department of Transportation,
HAZMAT Safety: <http://hazmat.dot.gov>.

Reformatting Contractors

Bono Film and Video
3200 Lee Highway
Arlington, VA 22207
(703) 243-0800
www.bonofilm.com

Chicago Albumen Works
PO Box 805
174 Front Street
Housatonic, MA 01236
(413) 274-6901
www.albumenworks.com

Northeast Document Conservation Center
100 Brickstone Square
Andover, MA 01810
(978) 470-1010
www.nedcc.org

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The series is distributed to all NPS units and is available to non-NPS institutions and interested individuals on line at http://www.cr.nps.gov/museum/publications/conservoogram/cons_toc.html. For further information and guidance concerning any of the topics or procedures addressed in the series, contact NPS Museum Management Program, 1849 C Street NW (2265), Washington, DC 20240; (202) 354-2000.