



Smithsonian  
Institution

April 5, 2005

## CELLULOSE NITRATE STILL PICTURE AND MOTION PICTURE FILM

Background	1
Policy	2
Responsibilities	2
Enforcement	2
Recommended Implementation Steps	2
Support Services for Storage and Handling of Cellulose Nitrate Film	3

---

### Background

The storage of all cellulose nitrate still picture and motion picture film is regulated by National Fire Protection Association (NFPA) 40 — Standard for the Storage and Handling of Cellulose Nitrate Film. Familiarity with this standard is an essential component of collections management of cellulose nitrate film. In addition, cellulose nitrate film is considered a Class 4.1 flammable solid by the Department of Transportation (*DOT Code of Federal Regulations* [CFR] 49) and as such may not be transported without proper signage.

Under normal museum storage conditions, cellulose nitrate film (nitrate) decomposes and may deteriorate to the point of being unusable. As it deteriorates, it emits acidic gasses that can damage nearby materials. Research has shown that severely deteriorated nitrate film stored at more than 100° F for over one week may spontaneously combust (National Archives and Records Administration, 1949); furthermore, in the event of a fire, improperly stored nitrate film could dramatically increase damage to surrounding collections.

The Smithsonian Institution continues to identify and segregate cellulose nitrate film since the initial issuance

**Background**  
(continued)

of this directive in 1982. Storage of nitrate film is a problem for all museums, archives, and libraries, because new collections are received and new holdings of nitrate film may be found. Therefore, a vigilant Smithsonian policy for the identification and disposition of nitrate film is necessary.

---

**Policy**

Smithsonian policy requires prompt segregation of all still and motion picture nitrate film from the collections; and removal of the nitrate film to storage that conforms with the provisions of NFPA 40 (maintained by the Office of Safety and Environmental Management [OSEM]).

---

**Responsibilities**

Heads of museums, research centers, and offices are responsible for the implementation of this policy (see also the "Safe Work Practices for Control of Collections-Based Hazards" memorandum of May 7, 2003, from the OSEM). This responsibility includes training staff to identify nitrate film, and to establish and implement procedures for the removal, copying, storage, or destruction of nitrate film.

---

**Enforcement**

As a health and safety matter, storage of nitrate film should be monitored by unit safety officers and OSEM fire protection personnel.

---

**Recommended  
Implementation  
Steps**

Accepted practice in museums, libraries, and archives is to copy nitrate film onto stable film bases (silver-halide polyester film) to preserve and make accessible historically significant images. Nitrate negatives and film are copied onto a stable film base when researchers require access to their historically-significant images. For highly valuable nitrate film, retention of the original after duplication is preferred. Other guidelines are as follows:

- **Reformatting.** Contract vendors may perform the copying. Under limited circumstances, Smithsonian

**Recommended  
Implementation  
Steps** (continued)

photographic services units may provide copying services

- **Transportation within units, to storage, or to reformatting vendors.** All transportation of nitrate film is regulated by DOT CFR 49.
  - **Storage.** Final disposition of nitrate film depends on the individual unit's activities and OSEM's interpretation of NFPA 40.
  - **Disposal.** When nitrate materials are identified for deaccession, the original nitrate film becomes a "hazardous waste," strictly regulated by the Environmental Protection Agency under the Resource Conservation and Recovery Act, and it shall be destroyed according to hazardous waste disposal procedures established by the Institution (OSEM) and federal, state, and local regulations regarding the disposal of hazardous waste.
- 

**Support Services  
for Storage  
and Handling  
of Cellulose  
Nitrate Film**

The Smithsonian Institution Archives (SIA) is the liaison for an off-site nitrate film storage facility that conforms to NFPA 40. Museums, research centers, and offices that want to store nitrate film in this facility should arrange transportation, storage, and inventory control of the film with the SIA's Technical Services Division. Space in this remote secure storage facility is limited.

SIA has developed a protocol that uses Fourier Transform Infrared (FTIR) spectroscopy for the nondestructive identification of cellulose nitrate film, and the Archives can be consulted regarding identification, reformatting, storage, and disposal of cellulose nitrate film.

---

**CANCELLATION:  
INQUIRIES:  
RETENTION:**

SD 502, August 16, 1993.  
Smithsonian Institution Archives  
Indefinite. Subject to review for currency 24 months from date of issue.