NEDCC
NORTHEAST DOCUMENT CONSERVATION CENTER

PRESERVATION LEAFLET

EMERGENCY MANAGEMENT

3-5 Disinfecting Books and Other Collections

Last updated: February 24, 2025

This leaflet addresses general questions about disinfecting books and paper-based cultural heritage collections. NEDCC has added a section to the beginning that addresses specific concerns about COVID-19.

COVID-19 CONCERNS

The advice in this section is based on the current research available from the cultural heritage, medical, and scientific communities regarding COVID-19; as their understanding of the virus evolves, NEDCC's advice for the cultural heritage community will, too. Each organization will need to exercise caution in accordance with its risk tolerance, its understanding of the available research, and guidance from local, state, tribal, and federal officials.

Human Health and Safety

The World Health Organization (WHO) has stated that the SARS-CoV-2 virus "can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe…People may also become infected by touching surfaces that have been contaminated by the virus when touching their eyes, nose or mouth without cleaning their hands."[i] The U.S. Centers for Disease Control and Prevention (CDC) has stated that "The principal mode by which people are infected with SARS-CoV-2 (the virus that causes COVID-19) is through exposure to respiratory droplets carrying infectious virus. It is possible for people to be infected through contact with contaminated surfaces or objects (fomites), but the risk is generally considered to be low."[ii]

The best way to protect staff and visitors at cultural heritage institutions from the virus is to follow CDC guidelines on "How to Protect Yourself and Others," specifically: get vaccinated, wash your hands often, avoid close contact, and cover your nose and mouth with a mask when around others.[iii] Note that for collection safety, hand washing with soap and water is preferred over using hand sanitizer because the former removes dirt and oils and the latter does not. Dirt and oils can transfer to collections and stain or damage them. Hand sanitizer may also leave a residue on collections materials that can be damaging over time.[iv]

Quarantine

It is incumbent on each organization to understand how its collection materials are used and handled and to review research results for data that can guide its decisions about quarantine.

- NEDCC recommends that cultural heritage organizations consult the website of the REopening Archives, Libraries, and Museums (REALM) project, which is conducting scientific research on collection-specific materials, at https://www.oclc.org/realm/home.html. REALM's sortable table of lab testing results is particularly useful for evaluating risk.
- A brief published by the U.S. Centers for Disease Control states that "the risk of fomite [surface] transmission after a person with COVID-19 has been in an indoor space is minor after 3 days (72 hours), regardless of when it was last cleaned."[v]

To address concerns about possible transfer of the SARS-CoV-2 virus via collections materials, the Northeast Document Conservation Center (NEDCC) recommends quarantining materials after handling by staff and visitors if:

- materials have been handled by an individual with a confirmed case of COVID-19
- there are a high number of cases in your area
- your community has a low vaccination rate
- you serve vulnerable populations, including the elderly and persons who do not have

access to the vaccine (e.g. children under 12)
- other cleaning and disinfection methods would harm collections materials

In general, NEDCC recommends quarantine over cleaning or disinfection, because cleaning and disinfection methods are likely to cause damage to collections materials. (See the section below for more information about disinfection.)

If a dedicated quarantine space cannot be established, staff can place items in bags or bins until the quarantine period is over so that staff do not accidentally handle the items. It is not advisable to tightly seal the containers because this can create potentially-damaging microclimates.

The length of the quarantine periods should be determined by assessing the level of risk in your community, the type of materials to be quarantined, how materials will be stored during quarantine (e.g. stacked vs. unstacked), and ambient environmental conditions (e.g. temperature). Decisions should be based on scientific studies that test the attenuation of the SARS-CoV-2 virus on collection-specific materials.

Note that the REALM Project's Round 4 tests document that stacking collection materials can prolong the survivability of the SARS-CoV-2 virus.[vi] In addition, it has been demonstrated that cold temperatures prolong the life of SARS-CoV-2, while warmer temperatures decreased the lifespan of the virus.[vii] This is a consideration for libraries using outdoor book drops and for cultural heritage institutions without climate control in collection processing areas.

Information about quarantine decisions in libraries around the world is available from the REALM Project[viii] and the International Federation of Library Associations and Institutions (IFLA).[ix]

DISINFECTING COLLECTIONS

Do not attempt to disinfect rare or archival materials, museum objects, or other valuable collections unless under the guidance of a conservator. Instead of disinfection, NEDCC recommends implementing hygiene practices for both staff and patrons, and quarantining collection items as needed. Quarantine requires no special training to implement, is not expensive, and does not risk damaging collections.

Not Recommended: Cleaning and Disinfecting Products

Liquid disinfectants and powdered cleaners can damage cultural heritage collections if they come in contact with them and are therefore **not recommended** for disinfecting collections. Liquid disinfectants can cause moisture damage, discoloration, and staining. Chemicals in these products can react over time with the components of media materials and objects (e.g. plastics, metals, paints, and dyes) and can cause paper-based materials to become weak and/or brittle as they age. Powdered cleaners are too abrasive in general to be used directly on cultural heritage collections.

Not Recommended: Fogging

The use of fogging, electrostatic sprayers, misters, or vaporizers to disperse disinfectant in spaces with collections is strongly **not recommended.** Fogging is ineffective because the chemical fog has no impact on contaminants between stacked or shelved materials, inside an archive box or folder, or in between book and magazine pages. Additionally, the chemical components of the fog can react with collection materials and cause damage and degradation over time.[x]

Not Recommended: Ultraviolet (UV) Radiation

Ultraviolet (UV) ray exposure as a means of sterilization is also **not recommended** for use on collections materials because UV light is known to cause fading, discoloration, embrittlement, and accelerated aging of materials.[xi] This damage is both cumulative and irreversible.

UV sterilization is effective only on surfaces that are directly exposed to UV radiation, so stacked materials or pages inside closed books will not be thoroughly sanitized. Dirt and dust can also impede UV sterilization.

UV may be an effective means of sterilizing non-collections materials such as headsets, audio guides, laptops, and tablets. It should be noted that UV exposure poses serious risks to human health, including cataracts and skin cancer. Do not shine UV lamps on your skin or eyes.[xii]

Not Recommended: Heat Treatment

While heat has been shown to be effective at killing SARS-CoV-2, this requires exposure to high

temperatures for 20 minutes or more.[xiii] This amount and intensity of heat is potentially damaging to collections materials and is therefore **not recommended**.

Placing materials in a microwave oven is **not recommended**. Circulating library books and other materials may contain metal pieces (e.g. RFID tags) that can smolder or catch fire when heated.

CLEANING & DISINFECTING FACILITIES

Cleaning (with soap or detergent) **removes** or reduces germs on surfaces, thus lowering the risk of transmission.

Disinfection (using disinfectant) **kills** germs on surfaces, which reduces the risk of infection.

Cleaning and disinfection are strategies that can reduce the spread of disease in public spaces, and the CDC has a helpful guide on this subject for community facilities in general.[xiv] The guide includes information on disinfecting hard (non-porous) surfaces such as tables and doorknobs, soft (porous) surfaces such as carpet and drapes, electronics such as touch screens and computer keyboards, and textiles that go in the laundry such as clothing and linens.

Not Recommended: Fogging

The use of fogging, electrostatic sprayers, misters, or vaporizers to disperse disinfectant in spaces with collections is **not recommended**. See the previous section for more information about this recommendation.

Fogging may pose a risk to human health. If fogging is used in public spaces, ensure that health and safety protocols are followed.[xv]

Recommendations: Cleaning and Disinfecting Products

If cleaning and disinfecting solutions must be used in collections spaces, follow the EPA's "6 Steps for Safe & Effective Disinfectant Use,"[xvi] and **do not splash or touch collections materials with the cleaning solution**. Ensure that surfaces such as shelving, tables, carts, etc., are completely dry before they come into contact with collections materials. See the previous section for more information about cleaning and disinfecting products.

When choosing a product, pay attention to guidelines for contact time, formulation type, surface type, and use site. Products that are free of dyes or fragrances are preferred for use in proximity to collections. Consult the EPA's List N Tool: COVID-19 Disinfectants[xvii] to find a product that is effective specifically for controlling the spread of COVID-19.

A safe and effective cleaning solution can be made quickly and easily by combining water and alcohol in a clean spray bottle. Fill 30% of the bottle with water and fill 70% of the bottle with ethanol (ethyl alcohol) or isopropyl alcohol. Note that the isopropyl alcohol sold at most pharmacies is typically diluted to 70% or 91%, and the 70% product can be used as-is for cleaning. A product with a percentage higher than 70% needs to be diluted with water. Concentrations of alcohol below 70% are not strong enough to be effective, and concentrations of alcohol above 80% will evaporate too quickly to be effective. For example:

- If using 70% Alcohol, then no dilution with water is required.
- If using 91% Alcohol, then combine 77ml alcohol with 23ml water to create a 70% solution.
- If using 100% Alcohol, then combine 70ml alcohol with 30ml water to create a 70% solution.

HYGIENE PRACTICES

Staff and patrons should be encouraged to follow hygiene protocols to stop the spread of infectious diseases. These include:

- frequent handwashing, e.g. before and after handling collections materials (use hand sanitizer only if soap and water are not available);
- regular cleaning of frequently touched surfaces and shared workstations or equipment;
- using a disposable paper barrier on materials that cannot be cleaned, such as foam book cradles; and
- wearing a mask that covers the nose and mouth when interacting with persons outside of your household.

COMMUNICATION

NEDCC advises collecting institutions to inform the public about their approaches to disinfecting facilities and collection materials and to ensuring staff and patron safety. When customers understand what

institutions are doing to mitigate risk, they are less likely to attempt their own, damaging disinfection methods at home.

ADDITIONAL RESOURCES RELATED TO COVID-19

U. S. Department of Homeland Security. (2024, April 30). *Master Question List for COVID-19 (Caused by SARS-CoV-2).* Science and Technology Publication Library. https://www.dhs.gov/publication/st-master-question-list-covid-19

Reopening Archives, Libraries, and Museums (REALM) Project.

- "Caring for Your Resources During COVID-19" [1 hour 30 minute video]. https://www.connectingtocollections.org/realm/ and https://youtu.be/34Bg6CNvmIQ
- "Cleaning and disinfecting considerations." February 5, 2021. https://www.oclc.org/content/dam/realm/documents/cleaning-considerations.pdf
- "REALM: Frequently Asked Questions." https://www.webjunction.org/news/webjunction/realm-faq.html
- "Resources – Toolkits for Archives, Museums, and Libraries." https://www.oclc.org/realm/resources.html
- "Visual aid: How long the virus survives on commonly used library, archive, and museum materials." December 19, 2020. https://www.oclc.org/content/dam/realm/documents/visual-aid.pdf

ENDNOTES

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[xii] U.S. Food and Drug Administration (FDA). (2021, February 1). *UV Lights and Lamps: Ultraviolet-C Radiation, Disinfection, and Coronavirus*. FDA. https://web.archive.org/web/20230102025240/https://www.fda.gov/medical-

devices/coronavirus-covid-19-and-medical-devices/uv-lights-and-lamps-ultraviolet-c-radiation-disinfection-and-coronavirus

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