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Archives Conservators Discussion Group 2005: Hazardous Holdings

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ABSTRACT

The moderated panel discussion focused on hazards found in collections, including bird and rodent droppings, radiation, blood-borne pathogens, mold, and chemical agents responsible for contaminating artifacts and surroundings. Chemical agents discussed included arsenic, asbestos, DDT, and Zyklon B. Not all materials in an archive are paper-based, and artifacts stored along with archival materials may require special handling to keep object, archives, and handler safe. Handling suggestions were made for ammunition, medical equipment, and cellulose nitrate. Health and safety policy and one institution's chemical hygiene plan were shared. Panelists provided images of hazards and described solutions and resources to use when hazards are encountered. The presentation of each speaker is summarized and original handouts are included.

INTRODUCTION

Many archival collections contain more than paper, including eclectic materials that may carry specific hazards. Past research by Catharine Hawks and Kathryn Makos revealed some of the more common hazards found in collections, including those that may affect archival and library materials (Hawks and Makos 2001). The moderators are indebted to these authors for their extensive research, especially the tables and lists of hazardous chemicals associated with each collection type found in this article. Despite the broad focus of the research, it has yet to reach the archives and book and paper groups. Conservators who work primarily with paper-based materials are at risk for exposure to radiation and pesticides such as arsenic and for contact with potentially infected biological materials, blood-borne pathogens, and specific chemicals.

The 2005 AIC Book and Paper Group Archives Discussion Group met in Minneapolis on Sunday, 12 June, to discuss hazardous holdings. The panel was moderated by Linda Blaser, Preservation Officer, National Archives and Records Administration. Panel members provided images and descriptions of hazards encountered and outlined resources to devise solutions. Presenters and discussants found that although the hazards are situation-specific, solutions designed to prevent or minimize exposure are similar to those faced by conservators in other fields. A summary of each presentation is provided below, followed by a bibliography.

SUSAN LEE-BECHTOLD: HOW TO RECOGNIZE RADIOACTIVE ARTIFACTS IN AN ARCHIVE

Examples of radioactive artifacts found in record holdings include raw ore samples; spent uranium oxides (in the noses of non-nuclear bombs); heating mantles from decorative and camping lanterns; radium paint on gun sights; cathode ray tubes from computer monitors and TVs; some yellow, orange, and red pre-1971 Fiestaware; natural zircon or treated topaz, beryl, and tourmaline gemstones; and even the sealed ion source from smoke detectors. In paper-based collections, a radioactive source might include absorbent paper onto which radioactive ions in a solution were once spilled. In some instances, a photograph or other reproduction of the radioactive artifact may suffice for records purposes. Radioactive materials are considered hazardous waste and require special disposal, but radioactive items that are parts of collections can be

This open discussion took place on June 12, 2005, during the AIC 33nd Annual Meeting, June 8–13, 2005, Minneapolis, Minnesota. The moderators organized and led the discussion and recorded notes. Readers are reminded that the moderators do not necessarily endorse all the comments recorded and that although every effort was made to record proceedings accurately, further evaluation or research is advised before putting treatment observations into practice.

kept, if stored properly. In order to dispose of hazardous waste, the facility must apply for an Environmental Protection Agency (EPA) number, which is not difficult, and a hazardous waste contractor will then remove and dispose of the items. If radioactive materials are found within a collection, the international symbol for radiation (a black or magenta tri-foil with yellow background) is required for proper labeling. It is also imperative to shield a radioactive object so that an employee who handles records or artifacts adjacent to the object is exposed to only background levels of radiation.

Some agencies have found it useful to screen incoming records from energy or military agencies. Radiation levels of materials in a collection can be detected with a small, hand-held monitor available from Lab Safety Supply, or by hiring a specialist to do a radiation survey using a Geiger counter or similar instrument. Screening information can be found by contacting universities, hospitals, and companies that drill for oil. These organizations use radioactive materials and must have either the capability to check them or a contract to have the materials checked regularly.

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SUSAN LEE-BECHTOLD: PASTE ADDITIVES

Historically used additives in wheat starch paste include oil of wintergreen, oil of clove (eugenol), thymol, *o*-phenyl phenol, alum, and arsenic. Conservators, particularly those who specialize in paper and books, may be at risk when treating materials previously mended or repaired with wheat starch containing arsenic. Arsenic was commonly used as an insecticide or fungicide. Thymol and *o*-phenyl phenol are not considered health risks when one is treating a previously repaired document, as thymol and *o*-phenyl phenol volatize rapidly and would no longer be present in the aged paste.

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EILEEN BLANKENBAKER: ARMED AND DANGEROUS

Handling hazardous materials and how these materials affect nearby objects is a concern for the conservators at the United States Holocaust Memorial Museum (USHMM) because of the large number of items that might have been contaminated during wartime. Blankenbaker made the following astute point: "It is not just ethnographic artifacts that could be exposed to pesticide or other hazardous materials but artifacts connected to wartime, epidemics, natural and man-made disasters that may harbor residues that can be problematic. It's often helpful to look at related items or clues in a collection, archive, or other documentation that may lead one to question what exactly is contained in the collection." During the panel discussion, Blankenbaker shared slides and several work experiences, including images of degrading cellulose nitrate film and artifacts, a bloody book from Sudan, live ammunition, DDT sprayers, medical equipment, and Zyklon B.

While cellulose nitrate film, combs, handles, and jewelry were identified and relegated for cold storage during a routine inventory, it was discovered that the actively degrading items were causing secondary forms of damage. Metal cabinet interiors and nearby metal objects were also damaged, and a storage cabinet had to be disposed of as a hazardous material. The deteriorating film had caused the cabinets to corrode, producing light, powdery rust that readily spread in the air when drawers were initially opened. As cellulose nitrate decomposes, it releases nitrogen oxide gases and highly toxic nitric acid which can irritate skin, eyes, and mucous membranes. The conservators wore personal protective equipment (PPE) consisting of gloves, N-95 mask, eye protection, and lab coats while vacuuming the dust with a HEPA vacuum.

When conservator Jane Klinger was expecting a book with human blood on it for an upcoming exhibit about the recent war in southern Sudan, she researched the dangers involved with possible disease transmission from an artifact containing dried blood. She discovered that the risk of viable pathogens was low in this case; however, taking universal precautions due to the presence of flaking blood was the best route. Gloves, eye protection, N-95 mask, and lab coat were used during handling.

During a collection audit, four bullets were discovered. Live ammunition is an obvious hazard and contradicts USNMM policy which disallows holding live ordinance or functional weapons. It is museum policy to remove the fire pin from every weapon. Blankenbaker suggested useful safety guidelines for handling firearms and ammunition in a museum collection are to be found on the web. The following warnings are given: always assume a firearm is loaded and never point it in anyone's direction, and always assume ammunition is live and have it examined by qualified personnel. Certified gunsmiths, military/police, or park service personnel tend to be familiar with firearms and ammunition, and can direct the safe handling and disarming of the artifact so that it can be preserved.

The Holocaust museum staff works with many artifacts rescued from the camps such as four thousand shoes and

rotating collections of uniforms on loan from museums on the site of former concentration camps, Mydonek and Auschwitz. Most of the uniforms have been cleaned at some point in the past and are not considered hazardous. However, the potential for contamination exists because historical records show that, during the liberation of the camps, Allied troops used DDT sprayers to kill typhus-spreading lice. Although shoes in the USHMM collection tested negative for pesticide residues, these items are handled with appropriate personal protective equipment (PPE) to prevent skin contact, inhalation, and contamination of personal clothing.

Recently, conservators at the Holocaust Museum installed a special exhibition called Deadly Medicine, Creating the Master Race. Artifacts from Hartheim Castle, a euthanasia center that was part of a program where the disabled were killed, include a doctor's coat, an asbestos mitt, and a case with personal belongings retrieved from a pile of burned and buried items. The artifacts were shipped to the museum in open plastic shopping bags within a cardboard box, allowing the asbestos fibers from the mitt to contaminate all artifacts in the box. After confirmation that the fibers were asbestos, a conservator vacuumed the doctor's coat and the other artifacts with a HEPA vacuum inside a large extraction hood while wearing PPE. The asbestos mitt remained double-bagged until installation and the installer also wore PPE. After unpacking, the extraction hood was thoroughly cleaned, and after the exhibition the interior of the case will have to be handled and treated as hazardous waste.

Medical equipment, including a broken syringe, unused needles, vials, and a metal container holding sterilizing liquid, was donated to the museum along with a collection of nurses' records and artifacts. Questions to consider when handling used medical equipment for potential exhibit and storage include: What is/was stored in vials and other containers? Do viable pathogens remain in used or broken syringes? How does a conservator know when to obtain such specific information? According to Alan Hawks at the Walter Reed Medical Museum, a durable microbe is the major danger from a broken syringe. Microbes such as anthrax or tetanus can survive for years, and these microbes can be found not only in used medical equipment, but also on soiled, dirty textiles or other dirt-containing artifacts. The liquid in the small vials is labeled Suprarenin, which Blankenbaker found on the Internet to be adrenaline, the first synthetic hormone. The vials were in good condition and the contents do not pose any problems. One major worry concerning the metal container was the possibility that it held Picrin, a sterilizing agent used prior to 1940. When Picrin evaporates, it forms highly explosive crystals that are reactive to heat, impact, or friction. Luckily, the container was in good condition, the contents in the container remained in liquid form, and the identity was determined to be a common germicide, not Picrin. Other advice to consider is: Beware of mercury leaks from broken thermometers, keep tetanus vaccinations up to date, and consider decontamination procedures. Decontamination includes basic hospital decontamination procedures that may endanger the artifact and commercial gamma irradiation used to prevent anthrax contamination by the U.S. Postal Service.

Many people may be surprised to find that the poison, Zyklon B, is exhibited in the museum. It is housed in a sealed Lucite container. Zyklon B, sodium cyanide on a calcium pellet carrier, was originally developed in Germany for use as an insecticide and rodenticide. When exposed to air, the pellet reacts with moisture and releases cyanide gas. From 1941-45, it was used as a homicidal agent in Nazi concentration camps. The material exhibited in the museum is spent, meaning the pellet has been exposed and virtually no cyanide remains. Additionally, a drum containing 145 pounds of the material was stored in the museum. In 1999, museum security and protective services began evaluating potential chemical hazards present in the facility and decided to dispose of the material. Stringent testing followed, showing in both cases the amount of sodium cyanide present was far below regulatory levels, the sodium cyanide does not pose a health threat, and it does not require the museum to meet any specific legal requirements. Part of the response to this material was an emotional one; what the material represented negated what test results showed. This experience illustrates that the conservator often has to be an advocate for safe artifact use and handling while also determining a way to defuse difficult situations. Ironically, the material stored in the museum may be less hazardous than degraded cellulose nitrate.

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JO ANNE MARTINEZ-KILGORE: EVIDENCE OF RODENT INFESTATION

Martinez-Kilgore recently encountered groups of materials previously infested with rodents. Signs of rodent infestation include droppings, gnawed paper edges, deep yellow urine stains, and debris or nesting materials such as paper scraps and feathers. Since Hantavirus Pulmonary Syndrome (HPS) was identified in the early 1990s as the cause of numerous deaths in the Four Corners region of the U.S., HPS has been linked to the presence of rodents in general, and droppings and urine residue in particular, so encountering evidence of rodent infestation can carry serious implications for those handling such materials.

HPS can be transmitted to humans by direct contact with infected deer mice or inhalation of virus particles from the urine or droppings of infected deer mice. Death results from HPS in 45% of cases (Garbe and Radke 1998).

In 2004, Martinez-Kilgore assessed the condition of a few hundred boxes of records that had experienced water damage, fire damage, or pest infestation. A portion of the boxes was known to contain rodent droppings. Many other boxes had been stored in similar environmental conditions and had the high probability of having been infested by rodents. In the spring, she came across much evidence of rodent infestation in a group of 380 ledgers that had been stored in the historic general store for which they documented almost seventy years of transactions.

It is crucial to spot the evidence of rodent infestation among records or research materials and take the necessary precautions:

- Use personal protective equipment (PPE) consisting of a HEPA respirator, Tyvek suit, disposable gloves, eye protection, head protection, and footwear protection.
- Isolate items in a rodent free environment for a minimum of 14 days.
- Use a 10% bleach solution in water to clean the exterior of record boxes, work surfaces, tools, and PPE. Discard disposable PPE at the end of each work session in sealed bags.
- Use a HEPA vacuum to clean debris and to reduce airborne particles.

The virus is not thought to be viable after 14 days; however, each certified industrial hygienist consulted advised always handling affected records utilizing PPE. Conservators, archivists, librarians, researchers, etc. need to consider certain factors when dealing with rodent infested materials:

- The region of the country where affected materials have been stored and if there has been any evidence of HPS.
- When the last incidence of rodent infestation could have occurred (e.g. how recently).

Contact a local certified industrial hygienist and local departments of health for assistance. Martinez-Kilgore now routinely carries her HEPA respirator and a spray bottle of 10% bleach solution to view materials on site.

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GLEN RUZICKA: HAZARDOUS MATERIALS

I. Staff Health and Safety Committee

Employers have the legal responsibility to insure the safety of the staff in handling potentially hazardous materials. If we agree that mold is potentially hazardous material, then the likelihood that conservation and preservation staff will be handling these materials is 100%. One means of addressing this responsibility and actively involving staff in their own safety is through the organization of an in-house staff Health and Safety Committee.

The Conservation Center for Art and Historic Artifacts in Philadelphia established an internal committee to recommend policies for health and safety, to provide training, and to monitor lab compliance, and to serve as a resource for review of issues relating to safety as they arise in lab projects or proposed projects. If this model is applied to a collecting institution setting (museums, libraries, archives), participation can be widened to staff outside of preservation/conservation. Health and safety issues potentially affect all staff who handle collections.

The mission of the Health and Safety Committee are as follows:

Staff Support

- Act as conduit for safety information
- Assist staff in making correct safety decisions
- Assist staff in responding to emergencies re. hazardous materials
- Provide safety training for staff
- Monitor healthcare issues/workplace safety
- Support staff in securing safe working conditions off-site
- Respond to staff inquiries/concerns
- Assess hazards and risks for both on- and off-site projects.

Facilities Management

- Monitor lab compliance with Occupational Safety and Health Administration (OSHA) regulations
- Maintain equipment and utility areas
- Monitor integrated pest management (IPM)

One of the first responsibilities of this committee was to develop a chemical hygiene plan for the institution. This document begins with sections on general principles, health and hygiene; included in this background information are the locations of material safety data sheets (MSDS) and the locations of emergency equipment in the lab. A section on mold policy addresses the lab policies on handling and storage of mold damaged materials, the most common hazard. Sections on food and drink and housekeeping similarly outline the lab policies on these issues. A section on chemical handling and storage details how chemicals are to be stored, transported, used, and disposed in the lab.

Every new employee, in addition to receiving a copy of the chemical hygiene plan, is given a tour of the lab by a member of the Health and Safety Committee in order to orient them to safety equipment, emergency equipment, chemical handling, and storage. New employees are

required to sign a copy of the chemical hygiene plan, and this is added to their personnel file.

II. Pesticides and Collections

Pesticides and fungicides until recently were commonly used in collection treatment of paper often as an additive to adhesives. Collections that have been repaired or treated in the last 120 years are today reappearing in our treatment labs for remedial treatment. In planning for the treatment of those items that have been previously repaired in the late nineteenth into the twentieth century it should be assumed that they might contain fungicides.

A common example includes silked documents; the adhesives used in silking often included arsenic. Labs that are planning treatment of items that may have been treated with arsenic are required to adhere to the OSHA arsenic standard (OSHA Directive CPL 02-02-022). As an employer if you know your staff has the potential for arsenic exposure for any project you are required by law to abide by this standard. The standard stipulates the necessary precautions in handling arsenic based on the potential for exposure. The exposure limits in the standard are based on arsenic released in the air. It is the responsibility of the lab to determine through testing whether the OSHA arsenic standard applies and to implement the procedures to meet the standard.

Labs that are considering or planning projects that may necessitate following the OSHA arsenic standard must plan for the testing and monitoring that this standard requires. This can be a significant additional project expense. Contract conservators and labs planning to bid on a treatment project that can involve handling hazardous materials should make it clear in the pre-bid stage that the potential health risks of the collection are either determined prior to bidding or accommodation is given for additional costs due to handling hazardous materials.

III. "Routine Hazards" and "Extraordinary Risk"

Treatment labs must be very clear with employees that conservation treatment involves routine hazards such as treating documents that have had mold contamination or documents previously treated with fungicides. The question frequently arises: what measures are advisable to identify and quantify the risk for a particular project? A distinction should be made between projects that involve "routine hazards" that require working procedures that minimize potential risks and projects that pose "extraordinary risks," requiring risk assessment and monitoring.

Projects that involve "routine hazards" are small-scale mold remediation (the EPA defines a small-scale mold bloom as less than ten square feet; EPA 402-K-01-001), treatment of several items that may have been treated by fungicide, or treating a small collection that may have been exposed to vermin. In many cases, considering the scale of the project and the extent of evidence of hazards, efforts to identify and quantify the risks (e.g. mold identification by a microbiology lab) often result in unclear determinations and seldom have definitive results. In these instances the best course of action is to plan the project as if the hazards are present. This means wearing the appropriate personal protective equipment, and following precautionary procedures: for example, wear gloves and respirator when removing silk dry from a document, or wear gloves when handling or washing documents that have been silked.

It is becoming more common for projects that involve "extraordinary risks," such as larger scale treatment of mold-damaged collections, to rely on outside monitoring by a health and safety engineer. Laboratories should consider establishing contacts in advance with building engineering contractors who have health and safety consultants. For projects of this type, the health and safety consultant will have the responsibility of establishing the risk, monitoring the project, stipulating the necessary precautions, and reviewing compliance of treatment staff.

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NANCY STANFILL-MCCARTY: MOLD CONSEQUENCES

On 12 July 1973 a fire broke out on the sixth floor of the National Personnel Records Center (NPRC), located in Overland, Missouri, a suburb of St. Louis. The fire burned for four days, until it was declared completely extinguished on the sixteenth of July. Of the 22 million records stored on the sixth floor, 15.5 million were completely destroyed. The remaining 6.5 million wet records were subjected to high heat and humidity of a St. Louis summer which caused mold growth on the records. The records were vacuum freeze-dried at various aeronautical agencies, and all 6.5 million records were returned to the building (now five stories) by December 1973.

In April 2002 three separate industrial hygienist surveys revealed high counts of inactive mold spores in various areas throughout the building, with the highest count being in the area where surviving records are stored, known as the B-Files. Under normal circumstances, this area might be quarantined, and the records would be off-limits. However, the NPRC is the repository for all personnel records of separated military personnel of twentieth-century conflicts. This means that these records are requested and handled every day by various staff throughout the building. The Preservation Program was tasked with coming up with solutions for the following:

- Ensuring the staff is educated about mold and the associated health issues
- Ensuring that these records are handled correctly to minimize further damage (in addition to mold, the records suffered burn damage, are brittle from the vacuum freeze-drying, and many are distorted from the water)
- Keeping the mold-affected records as separate as possible from non-mold-affected records.

The Preservation Program set up a triage response to those mold-affected records that were requested by the staff of the NPRC. All records being pulled from the B-Files are checked by Preservation staff for mold containment, then based on their condition they are routed to a fume hood room, which is dedicated solely to vacuuming records with a HEPA vacuum, sheet by sheet. Once the records are vacuumed, they are either routed out to the requesting staff member, or given further treatment in Preservation. All vacuumed records are moved to a new registry, over which Preservation maintains control, and are stored in an archival environment, with temperature and humidity readings of 60°F and 40% RH. While a slow approach to the treatment of millions of records with mold, the NPRC Preservation Program is helping these records, one at a time, to preserve the information for the future.

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LINDA BLASER AND SUSAN PECKHAM: HEALTH HAZARDS FOUND IN PAPER-BASED COLLECTIONS

Microbes such as fungus, bacteria, viruses, and protozoa are ubiquitous, and in the appropriate conditions each can become an agent of disease, causing illness in humans. While limited contact with mold may seem innocuous, all types of mold cause allergic reactions in susceptible individuals and can exacerbate respiratory conditions including asthma. Because the reaction is a function of the immune system, each individual reacts differently to particular strains of mold as well as the amount of mold and degree of exposure. Repeated contact with even minor amounts of mold can make one more susceptible over time. Wearing personal protective equipment (PPE), including latex or nitrile gloves, coveralls, and an N-95 face mask, not only protects the worker but prevents transport of mold spores to others who are susceptible. Most of the time, mold is noticed only after a water emergency, such as a broken pipe or HVAC malfunction. Sometimes mold is discovered in more unusual locations; therefore, regular in-depth building inspections are suggested.

During a routine check in an older building that stores records, mold growth was found near shelves storing records ("stacks"), under and below air handlers. Air handlers can spread spores onto archival holdings as well as furniture and building components. Bleach is not recommended for cleaning furniture and shelving; it contains too much water that can be left behind once the chlorine dissipates. This water can promote more mold growth. Cleaning solutions containing quaternary ammonium compounds are best for removing mold spores from the surfaces of non-record material.

Mold was found on water-damaged asbestos pipe insulation. The asbestos pipe insulation became friable, dropping asbestos-laden debris onto record boxes. The law requires professionally trained personnel for examination and removal of asbestos products. Breathing asbestos fibers can lead to pleural disease, mesothelioma, lung cancer, and other asbestos-related cancers. If products containing asbestos do not crumble and are not exposed, the risk is negligible in respect to health effects. The situation changes when the products break down.

Other problems have surfaced, such as records smeared with droppings from chickens, nesting pigeons, bats, rodents, and spiny lizards. If records are coming into the facility with these problems, then the originating agency should pay to remediate the droppings. Bird and bat droppings are very dangerous and should be handled wet to avoid the dust; however, wet is not always an option. Not all archival materials can get wet without causing permanent damage. Research and testing must be done by a conservation professional before original records can be wetted with water. The simplest way to avoid contamination until conservation work can be done is to place the records in sealed polyester envelopes. During conservation treatments conservators should wear full personal protective gear, discarding all PPE between every use. *Cryptococcus neoformans* is found in the droppings of wild birds, and the fungus *Histoplasma capsulatum* is found in bat guano. Both fungi cause disease when airborne spores are transmitted via the lungs. Toxoplasmosis is caused by the *Toxoplasma gondii* parasite and salmonellosis is caused by the bacterium *Salmonella;* both microbes are contagious and can be present in lizard droppings. Similar to mold infestations, personal protective equipment including gloves, respirator, and Tyvek suit should be worn by anyone handling materials where there is evidence of animal droppings. Where droppings are found on furniture, equipment, or floors, quaternary ammonium salt solutions can be used for cleanup. If the animal is found, one should wear PPE when handling and send the specimen to Federal Occupational Health (FOH) or a certified industrial hygienist to test for rabies (table 1).

Table 1. Sources of air- and blood-borne hazards

Mice droppings, urine, saliva	Hantavirus Pulmonary Syndrome (HPS); the virus is transmitted via lungs
Bat feces	Fungus *Histoplasma capsulatum*; air-borne spores are transmitted via lungs
Pigeon droppings, other wild birds	Fungus *Cryptococcus neoformans*; Cryptococcosis transmitted via lungs
Cats, dogs, fowl, birds, reptile (lizards or snakes) droppings	Possible infections: toxoplasmosis, caused by *Toxoplasma gondii* parasite, and salmonellosis, caused by variety of *Salmonella* bacteria.

Sources: U.S. Center for Disease Control (CDC), National Center for Infectious Diseases (NCID), Special Pathogens Branch; U.S. CDC NCID Healthy Pets Healthy People; U.S. CDC National Institute for Occupational Safety and Health (NIOSH); Canadian Centre for Occupational Health & Safety (CCOHS); and American Academy of Pediatrics and National Association of School Nurses *Health, Mental Health and Safety Guidelines for Schools.*
Created by Susan Peckham for the AIC/BPG Archives Discussion Group 12 June 2005

Table 2. Summary of blood-borne pathogens

Blood-borne pathogens and environmental contact outside the body	Survival on environmental surfaces
Hepatitis B	HBV can survive outside the body at least 7 days and still be capable of causing infection.
Hepatitis C	Recent studies suggest that HCV may survive on environmental surfaces at room temperature at least 16 hours, but no longer than 4 days.
Hepatitis A	Casual contact, as in the usual office, factory, or school setting, does not spread the virus. Transmission is "fecal-oral" and could occur if one came in contact with raw sewage.
HIV	Scientists agree that HIV does not survive well in the environment, making the possibility of environmental transmission remote.

Sources: U.S. Center for Disease Control (CDC), National Center for Infectious Diseases (NCID), Special Pathogens Branch; Canadian Centre for Occupational Health & Safety (CCOHS); and UK-based AVERT, an international HIV and AIDS charity.
Created by Susan Peckham for the AIC/BPG Archives Discussion Group 12 June 2005

On occasion, conservators and preservation professionals care for records that have identifiable blood staining, marks, or flaking blood. Questions have arisen regarding the human transfer of disease from records that contain blood.[1] When handling records with dried blood, a general policy would include wearing gloves while encapsulating the documents in sheet polyester. HIV does not survive on environmental surfaces; hepatitis B can survive on environmental surfaces at least seven days and still cause disease; and hepatitis C can survive at room temperature somewhere between sixteen hours and four days. In the case of record-handling, these pathogens will not be of great concern to most persons. However, as hepatitis A is transmitted via the "oral-fecal" route, those persons responding to an emergency or disaster involving, for example, broken sewer pipes, should be made aware. Pam West, Crew Chief of the National Park Service National Capital Region Museum Emergency Response Team, recommends that team members receive the combination Hepatitis A/B vaccination. For more information, contact the Red Cross for blood-borne pathogens training (table 2).

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NOTES

1. Disease and blood-borne pathogen references are from Web sites maintained by the U.S. Centers for Disease Control and Prevention; Canadian Centre for Occupational Health and Safety; American Academy of Pediatrics and National Association of School Nurses Health, Mental Health and Safety Guidelines for School; and UK-based AVERT, an international HIV and AIDS charity.

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Bloodborne Pathogens

Bloodborne pathogens training: Preventing disease transmission participant's manual, 06/03. Red Cross brochure stock # 655107, ISBN # 1-58480-167-0; $38.00/pk25 or $1.52 ea.

Preventing disease transmission. Red Cross training video stock # 655109, ISBN # 1-58480-169-7; $48.00. Contact: Meirina Hutabarat,Customer Service Coordinator, American Red Cross of the National Capital Area Chapter Headquarters, 2020 East West Highway, Silver Spring, MD 20910; 301-628-0056; 301-588-3234 (Fax); new e-mail : HutabaratM@redcrossnca.org : www.redcrossnca.org.

Body Fluid Clean-up Kits

Sharps Compliance, Inc. www.sharpsinc.com/spillkit.htm

First Aid Supplies Online www.firstaidsuppliesonline.com/nav.pl?cat=NavEmergency&prod=35-P10BFK.

Lab Safety Corp www.labsafety.com/store/product_group.asp?dept_id=34233&cat_prefix=5WA.

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