

Mass Deacidification: Considerations for Archives

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The National Archives and Records Administration is not now involved in a mass deacidification program. At first glance, it may seem strange for us to convene a conference on deacidification when our institutional involvement in mass deacidification is observational rather than active. On the other hand, it is entirely consistent with our stated long-term policy to continue to monitor the developments in the field of mass deacidification.

Over the last few years there have been a number of exciting new developments in the field. We are now at a point where it makes sense to review our position. This conference is one step in that process. Judging by the level of response to this conference, many other institutions and professionals are feeling the need to review the current state of the field as well.

In the next few minutes I would like to review the factors we considered when we made our initial decisions not to become actively involved in a mass deacidification program. The answers we reached may not apply to other archival institutions, but the questions are valid and may help others determine what course to pursue as they weigh mass deacidification options. Before I do that, however, I would like to outline some interesting distinctions between a library and an archives that I have come to understand gradually in my 30 years of working in both kinds of institutions.

How Archives and Libraries Differ

When the average U. S. paper conservator hears the terms "archival materials" and "manuscripts", images of paper with handwritten or typewritten text immediately come to mind. Both are on paper for the most part, and the treatment challenges would seem to be similar. This is true from a physical point of view; however, from an intellectual perspective there are some differences. While these intellectual differences almost always apply to the U. S. National Archives, they do not apply in all instances and may not apply equally at other institutions. Nonetheless, they are a useful way to distinguish between archives, manuscript repositories, and libraries.

Archives are organically connected to their creating entity and usually document an activity rather than a person. At the National Archives and Records Administration or NARA, that activity is the Federal Government. In a business or other organization, the archives would document how and when business was transacted. Because archives are broader in scope

than personal or literary papers, it is not unusual for their organizing segments to become quite large. At NARA the millions of records are contained in just 550 record groups. The largest of these includes more than 273,530 cubic feet of records, the nine next largest range in size between 39,457 cubic feet to 87,530 cubic feet. Because the intellectual organizing principle in an archives is very broad, intellectual control is likely to be broader and far less detailed than it would be in a manuscript repository. In a library or manuscript collection it is not unusual to know not only the title of each folder of loose papers, but the individual contents of each of the folders within a box. In an archives with holdings as large as NARA often the contents of many dozens or even thousands of boxes may be described in no more than a few sentences.

When I worked at the Library of Congress, manuscripts were not made available to researchers until a collection was completely processed. Processing included not only intellectual control, but boxing and foldering with conservation quality housings as well. This could take several years depending on the initial condition and size of the collection and the availability of staff to do the work. The key was that the material was not available until the work was completely finished.

At the National Archives we also process newly accessioned records as they come into our custody, but as soon as they are officially accessioned they become available for research. Our mission statement reads "NARA ensures for the Citizen and the Public Servant, for the President and the Congress and the courts, ready access to essential evidence." The records we hold are certainly valuable for historians, but more than that, they document the rights of American citizens, the actions of federal officials and the national experience. Often access to our records can be important to someone seeking a benefit to which they are entitled, or pursuing a legal claim, and such actions can be extremely time-sensitive. And with our legal requirements to provide information under the Freedom of Information Act, we may have to serve records the day after they are accessioned. Our initial processing activities are more streamlined than they might be in a less critical environment. The goal is to assure that the new records are safely housed and accessible. More detailed finding aids are usually deferred. Because of the nature of our holdings, clearly access is extremely important. It is a matter of institutional policy that access to any unrestricted record is possible in one form or another, and we go to great lengths to assure this. If you know that we have a particular piece of paper, and can provide a citation, or if you know that you are looking for an item and have an idea in what segments of records it might be, NARA will make those records available to you either in original or duplicate format as appropriate.

Even the terms used for the bodies of information in the different types of institutions are distinct and telling. At NARA accessioned records are "holdings" while manuscript repositories and libraries have "collections" reflecting the different ways in which the types of institutions acquire the information they contain.

These differences between archives and libraries' bound material become even more interesting. We are still dealing with paper based information, but again there are some physical and intellectual differences.

Libraries generally collect published material. Sometimes it is unique, but usually, even in the case of great rarities, at least one other copy exists. As a general rule, a book is by definition bound, and usually is cataloged so there is item level control. Because of the nature of publishing there are usually many copies of the book printed, and often, but not always, an economic consideration in its production. When the production costs are less, the profit is higher for the publisher; therefore, there is a motive to use the least expensive materials that will satisfy the requirements of the publication. In the past this has often meant non-permanent paper. On the other hand, archives have bound material that is unique. Our holdings at NARA are rich with ledgers and other types of registers. These volumes were created as blank books with ruled or printed blank form pages. Over time the information they contain was added by hand. The paper had to be robust to withstand the daily use the volumes received when they were active. A second type of archival volume is the composite, usually of correspondence or loose completed forms, often made of different sizes and types of paper and a wide variety of inks. Physically these volumes are challenging, but often the paper is of very good quality.

This description of differences between libraries and archives may not seem directly related to deacidification, but in fact, it identifies some of the important factors that brought us to a different initial position from our library colleagues.

The Evolution of Deacidification

After the excellent introduction to deacidification provided this morning and the information we have all acquired from the literature over the years, there can be no doubt that alkaline salts introduced into paper do something important to slow hydrolytic degradation. We have come a long way from the observations of Hansen in 1930s that the difference between a light and dark signature in the same 17th century book was the presence of alkaline salt in the light paper. Both papers had a heavy iron content, but only one was alkaline. William Barrow, the well know preservation pioneer, was responsible in part for the widespread acceptance of lamination and deacidification from the 1940s through the 1960s in both the library and archives communities. Barrow made the practical observation that some papers, which darkened significantly when exposed to the heat of a laminating press, would remain acceptably light if they were treated with an alkaline salt first. Barrow, with the zeal of a missionary and the support of the Council on Library Resources, translated this practical experience into the moral imperative of deacidification recognized almost universally by those now involved in preserving paper based information. In the same time frame NARA was also laminating and deacidifying records. Barrow's experience expanded to lead to the development of the first permanent durable paper-Permalife in the late 1950s. And the understanding of the importance of alkalinity in paper ultimately led to the development of a

national permanent paper policy in the early 1990s long after lamination ceased to be a treatment of choice.

The principle and practice of deacidification was widely adopted by many responsible conservators for sheets of unbound paper, while a variety of techniques was explored for deacidifying bound paper. Aqueous deacidification worked quite well for flat sheets of paper that had no water-soluble components, but for bound material it was more problematic. Paper swells when wetted and where constrained may not only distort unacceptably but also absorb fluid unevenly. Because the process addressed single sheets of paper and was labor intensive it was most suitable for very old paper and very valuable items, as well as material that had enduring research value, just as long as the paper was disbound and had no water soluble components. The Barrow labs did deacidify bound material, but it was not the relatively straightforward process of flat sheets and it was not a mass process. Richard Smith, in his doctoral thesis in library science at the University of Chicago in the late 1960s, proposed the first solvent based process, and demonstrated it with multiple sacrificial remaindered copies of the book *Cooking the Greek Way*. The solvents used in the process did not cause the paper to swell and did not cause most inks to bleed. I remember using the spray version of his process to deacidify a book on groundwood paper in the late 1960s in the lab at the Newberry Library. Quickly, after the pages had all been sprayed I plunged the volume into a garbage can filled with carbon dioxide (which was heavier than air) to convert the magnesium hydroxide to carbonate as rapidly as possible to avoid darkening of the paper from the treatment. Dr. Smith developed and further evolved his process to become the first mass deacidification process employed at the National Library of Canada. Meanwhile the Library of Congress explored other nonaqueous processes, including Diethyl Zinc. The National Archives monitored these developments. From the early 1980s on major efforts focused on mass treatments for library materials.

Preservation at the National Archives

The National Archives and Records Administration has a long history of preservation activities. It was an early proponent of cellulose acetate lamination and introduced a single bath deacidification process in the early 1950s that was widely used in other institutions. The laboratory location in the National Archives Building, where nonaqueous spray deacidification and other treatment techniques were used for individual treatments, has been in continuous use as a preservation facility ever since the building was first opened in 1937. In the early 1980s, in a reassessment of its preservation program, the institution explored a variety of approaches and in the Twenty-Year Preservation Plan outlined steps that emphasized maximum benefit for the greatest number of records.

The first approach was to provide the best environment possible. Since that time environmental considerations have been important in all new construction and renovation planning within the Archives nation-wide. The premier product of this approach is the National Archives Building at College Park, which has an exceptional system for environmental control of spaces where records are stored and used. Second, in the 20 Year

Plan efforts were focused on providing archival quality housings for records. This involved a significant commitment of both money for supplies and staff resources to execute. Third, emphasis was placed on attention to records that were most used and therefore most vulnerable to damage. Only at the end of the list after several other strategic steps, did the plan consider physical treatment of records. How could this be? In short, if records are well housed in a good environment and seldom used (as most of our records are) their rate of deterioration has been reduced. An interesting non-paper example is deteriorating acetate film, of which the Archives has great quantities. For several years we debated about duplication versus cold storage. It finally became apparent that the labor intensity of such a massive duplication project would mean that without cold storage much of the film would become unusable before it could be duplicated. Money was appropriated for the cold storage effort, and a contract for an off-site vault was recently awarded. The duplication effort will continue, but with the knowledge that we have bought more time. Now we will concentrate primarily on duplication of the most deteriorated film, and secondarily on those that are most requested in an effort to reduce their time in and out of cold storage. The situation for this film is more dramatic than it is for most paper because it has a much shorter initial life expectancy, but the benefits of the environmental approach are real for paper as well.

What were the considerations?

With this background you may be wondering what were the questions we asked ourselves as we decided what approach to take with mass deacidification.

What would we be buying were we to engage in a mass deacidification treatment program?

Deacidification slows hydrolytic acidic degradation of paper. As of right now it will not make paper that has lost its strength strong again, but it will slow the degradation of paper that is strong but vulnerable to acid hydrolysis. A mass deacidification program would be most beneficial for newly created materials on acidic paper, or for older vulnerable paper that still retains some strength. Generally records in the National Archives are not accessioned until they are about 30 years old. Until they are accessioned we do not have legal custody of them. To treat records still in the custody of the creating agencies would require a significant change in current practice and regulation. The National Archives worked with colleagues at the Library of Congress and the Government Printing Office to monitor implementation of the National Policy on Permanent Papers adopted by the U. S. Congress in 1990 which mandates, among other things, that: "Federal agencies require the use of archival quality acid free papers for permanently valuable Federal records...." We at NARA decided that focus on two important areas—first, improvement of environmental conditions for storage of records; and second, improvement of the quality of new records by stipulating that they be created on better paper would yield greater initial returns than investment in mass deacidification.

What are the holdings we are concerned about?

Obviously deacidification is most appropriate for records that are paper based, that retain strength, and that are not already alkaline. Since we do not currently have access to records until they are 30 years old, this eliminates the possibility of treating relatively new paper. It is interesting that except for pockets of material created primarily during wartime which are now quite brittle, most of the holdings of the NARA holdings are strong and flexible. For brittle material deacidification does not seem like a useful option. Microfilming is a much more practical approach. NARA has a microfilming program in house. Additionally NARA cooperates with commercial micropublishers to produce film of complete discrete segments of records, in exchange for preservation copies of the film.

Unlike the paper used to print books, much of the paper found in the Archives was used for correspondence or internal office use. Generally this paper is of higher quality than that used for publication. We are more vulnerable to damage from heavy use, at this point, than we are to loss from bits of brittle paper falling away on the floor. It is, however, an unavoidable fact that the records in the National Archives do not come in segregated packages. It is not unusual to find photographs, blueprints, microfilm, Thermofax, and audio or videotapes, or other unexpected materials mixed in boxes with the related paper records. There are also a variety of metal and other types of fasteners present often compressing an inch or more of paper. With some mass deacidification processes the presence of these materials would either result in damage to the records or would cause problems with the process.

Would we be willing to screen for this type of material? Not screen and accept loss? Accept the possibility of associated materials becoming alienated from their related records during the deacidification treatment?

Screening for unsuitable material would be a time consuming and labor intensive process. And it would be hard for NARA to pass on the responsibility of screening to workers not familiar with the records. It was difficult when we thought about our records to establish priorities that would successfully narrow the universe of records to those that were good, positive candidates for mass deacidification.

What about intellectual control?

The possibility of alienation or misfiling is the point that is of most concern for NARA. The records in the National Archives are categorized by record group, series, and box number. In some few cases there are finding aids that list folder titles, but generally, familiarity with the records is the key to finding an individual item. With this basic level of control it is extremely important that order be maintained. Once order is disturbed, records may as well be lost. It is an institutional policy that only one folder may be removed from a box at a time. The idea that records would be completely --or perhaps worse, partially-- removed from their box for mass treatment is one that is of concern to archival staff. If records were removed from their boxes to a treatment container for the process there would be great concern that they would somehow not be returned to the proper box. And if this were complicated by the need to review the contents of every box, and remove unsuitable material prior to treatment and replace it in the correct location following treatment the chance of lost records would

increase greatly. An ideal treatment would allow records to be treated with no screening and remain in their boxes in their labeled folders with all fasteners in place.

Is access a consideration? Are there any restricted materials?

The National Archives has significant quantities of records that are either security classified or protected by privacy restriction which cannot be out of NARA custody and which require special handling. Mass treatments are probably currently inappropriate for them.

Conclusions

Our conclusions, as we explored these questions, were that with the existing processes it was not time for us to invest in a mass deacidification program. We have never doubted the usefulness of introducing alkalinity into paper, but believe that at the time we made our initial decision, the logistical problems associated with a program and the potential physical and intellectual risks to records outweighed the benefits. For institutions with more homogeneous material and a different level of intellectual control, mass deacidification offers some real potential benefits. In all cases, however, it is important to avoid making a single approach the only arrow in your preservation quiver. Just as a lamination program could not stand alone, neither can a mass deacidification program. It is essential to plan a full and balanced preservation program, and to allocate your resources accordingly.