CHAPTER 5

# *Responding to a Mold Outbreak at the Catholic University of Toulouse*

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The library of the Catholic University of Toulouse was founded in 1877, at the same time as the University. It now holds approximately 100,000 books, including 23,000 rare books and 300 periodical titles. The library offers services to 3,700 students, 67 professors, and all employees of the faculties of Theology, Philosophy, Social Science, and Law, and it provides resources in the major teaching areas of these faculties. Theology and religious studies are especially well represented, making up nearly half of our collections. Our periodicals are mostly oriented toward theology, canon law, and the humanities. Along with books and journals, we provide electronic resources (databases, e-books, online journals, etc.). There are five staff members: one curator, three librarians, and one stack attendant, all trained in preservation issues. The library is part of several networks of academic libraries in France and participates in a regional periodicals conservation plan. This plan is a collaborative project

in which librarians from all regions of France have been working together since the 1990s to ensure that all their patrons have access to complete runs of serials that are in good condition and are fully cataloged. At the Catholic University of Toulouse, we are responsible for preserving the entire runs of 55 titles on religious studies.

In 2013, we noticed mold on a few volumes of journals where 197 titles are shelved on 882 linear meters (see Image 5.1). The dates of these titles range from the end of the 19th century to the present day, and the types of binding vary: cloth, cardboard, paper, or coated paper. Thinking it was an isolated incident, we quarantined the few volumes that were affected, while monitoring the rest of the collection. Unfortunately, we soon observed that other volumes were also affected, so we started thinking about how to respond to what could now be regarded as a mold outbreak.


**Image 5.1:** One of the journals most affected

## *Understanding Why This Occurred*

Two factors in our situation favored the development of mold. The first was high ambient humidity in the stacks where the mold was detected. Our library is located near a dry arm of a river. Groundwater keeps the basement damp, and the water rises by capillary action into the walls of the building. The room where the mold appeared also has a door that faces the outside and is not adequately insulated against external climatic conditions. The second factor favoring mold growth was the accumulation of dust on our collections. For several years, the library did not have enough human resources to dust all of our volumes and storage areas, even though conservation standards recommend that this work be done every year (Mouren 2007). The combination of humidity and dust provides the perfect environment for mold. Overall, more than 300 linear meters of shelving out of a total of 882 in this part of the library were affected by this outbreak.

## *Developing a Response*

Once we understood the scope of the problem, we installed sensors to assess the level of humidity in the space and learned over a period of testing that the humidity was, indeed, high but stable. This stability assured us that there were no new intrusions of water. We also called on a company specializing in preventive preservation in libraries to diagnose the severity of the outbreak and guide us in the steps to be followed. They took samples and determined that these were not dangerous but very common molds. They also assured us that, with the proper equipment, we could dry and vacuum the volumes ourselves—even the ones most affected—to completely sanitize them. This was good news because, at the time, we did not have the funds to use an outside company to handle treatment.

## *Addressing the Immediate Problem*

We first set up a quarantine space to isolate the volumes most affected. For this, we requisitioned new university rooms and had shelves and

sensors installed. These new sites had around 40 percent relative humidity, which was suitable for drying molds. The heavily affected volumes remained there for two months (see Image 5.2).

**Image 5.2:** One of the quarantine rooms

When the initial period of quarantine was over, we made sure that the mold looked dry, with a change in color and texture as well as a reduction in size. Any that did not look sufficiently dry, we left in quarantine for another month.

The dried materials were then transferred to a dust removal workstation and cleaned by our staff using equipment purchased for this purpose: a vacuum cleaner with an absolute filter (also known as a HEPA filter), brushes of different sizes and materials, and protective gear, such as gowns, gloves, and masks (see Image 5.3).

**Image 5.3:** Dust removal with staff protections

Staff varied the material of the brushes and the power of the vacuum cleaner according to the type of binding. For example, cloth bindings required longer and more powerful suction with a hard bristle brush than paper bindings. After treatment, we put the volumes back

in quarantine in a second room, also with controlled humidity to ensure that the mold did not return. Two months later, we examined the volumes one last time. If they were fully dry, with no new mold, we moved them to a temporary clean stack space so that they would again be available to patrons, since sanitation of their original location had not yet been completed (see Image 5.4 and Image 5.5).

**Image 5.4:** Volumes before treatment

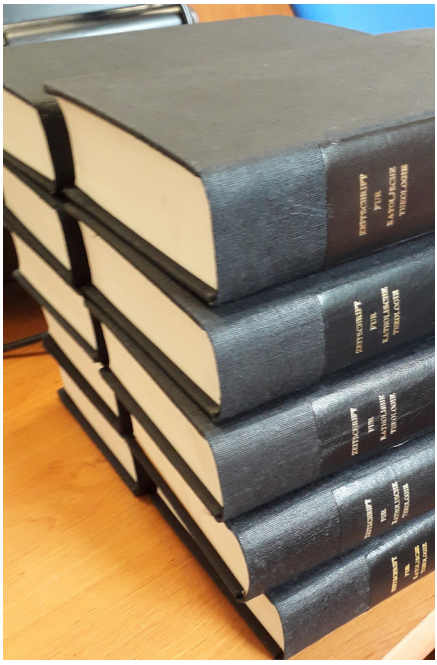

**Image 5.5:** Volumes after treatment

## *Tracking our Work*

To track our progress on this project, we created files that could be shared with all members of the library team. One of these files was a map of the affected area with the number of linear meters and the degree of contamination for each shelf. If we saw that the mold was increasing before we could handle the volumes, we updated the level of contamination on this file. We also used the file to help us visualize our progress in dusting and cleaning the collections (see Figure 5.1).

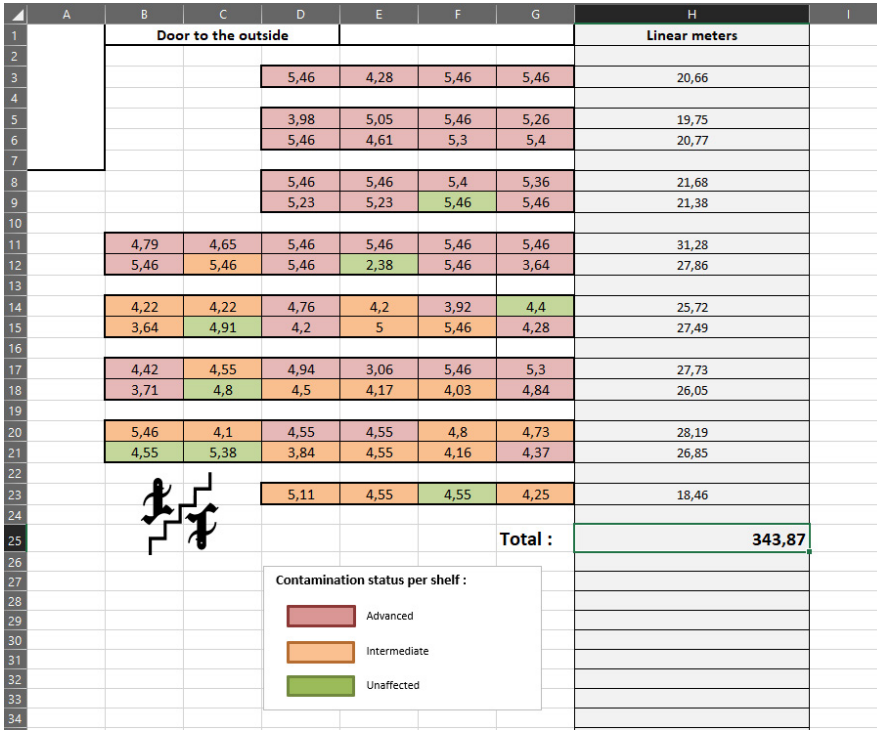


**Figure 5.1:** File showing levels of contamination in 2017

In addition to this file, we established lists of several kinds. One of these was a list of titles (with call numbers) to be prioritized for treatment, based on the requests of our users. Another was that of the journals already cleaned, with the end date of treatment and the new storage location. These files helped us keep up with what we needed to process as quickly as possible and what was available again for our readers. The status of titles and volumes was also indicated in our public catalog so that users could also keep track of what had again become available to them.

## *Addressing the Causes of the Problem*

Beyond addressing the immediate problem, we wanted, of course, to prevent this sort of outbreak from happening again. Because this was one of our largest locations for storing collections, we could not avoid reusing it for that purpose, so we needed to introduce sustainable

measures to regulate the humidity in the space and establish a schedule for regular cleaning. With the help of University technicians, we installed equipment for ventilation, purification, and dehumidification, and we installed permanent sensors to monitor the climate of the room continuously. Before returning cleaned materials to the space, we also asked the University's maintenance team to carry out a deep cleaning of the room with disinfectant products to prevent mold from developing in the hidden areas of the shelves or on the floor and walls. The final step will be to install a new external door with proper insulation so that moisture cannot enter the space from outside. This will bring the space into full compliance with recommended preventive conservation standards.

## *Completing the Project*

Because this preventative work was completed rather quickly, a number of materials affected by the outbreak were still unprocessed when the room was once again able to receive collections. We therefore called on the company that had diagnosed our situation to assist with cleaning the collections so that the items could be returned to their original home more quickly and again be available to our readers. To facilitate this, we moved all the remaining volumes (444 linear meters) to a commercial storage space off campus, where the conservation company could work on them. Once all of the materials were cleaned, it took us several months to return them to their original home from their various temporary storage places, but the project was finally completed. Now we have implemented our new monitoring and cleaning protocols to make certain that other molds do not appear.

## *Other Problems Encountered*

While remediating this mold outbreak, we had to solve related problems that it caused. The first was that our readers could not access the affected journals until they had been cleaned. We made up for this by making requests for articles from other French and international libraries that hold those serials. This caused our internal interlibrary

loan requests to increase by approximately 10 percent. It also meant that we were unable to honor external requests for articles that were too heavily contaminated to be loaned.

Two other problems were limited storage capacity and staff time. While waiting for the stack room to be cleaned, we had to store the treated materials in our other conservation areas. This created a lack of space for other collections, such as newly acquired books, other periodicals, and donations. Dealing with the contaminated volumes left our staff with little time for routine tasks, such as removing dust from or shelving other materials. As a result, library activities in general were slowed down.

## *Conclusion*

This was, in the end, a very large project. Of the 882 linear meters of shelving in the affected area, about 300 meters of held materials were heavily infected with mold, and over 500 meters contained materials that were very dusty but without mold. We were able to treat roughly half of the volumes in the space on our own and drew on the assistance of our consultants for the remainder. It took us 10 years to make all of the affected documents available to readers again because of our limited human and financial resources.

Because of the commitment of the staff, however, we were able to solve this problem even with our limited means. It took time and some help from a consultant to guide us in the conservation choices, but we learned that we could lead a project of this scale and complete it with minimal inconvenience to users. We feel better prepared to respond in the event of another disaster, and we can offer advice to partners in our regional consortium, several of whom have already asked us for details about our response. We hope that the brief account of our experience presented here will also help other libraries around the world, especially in small institutions like ours, who face similar preservation challenges.

## *References*

Mouren, Raphaële. 2007. *Manuel du patrimoine en bibliothèque*. Paris: Éditions du cercle de la librairie.