Isolation, identification and decontamination of mold fungi on collection books stored in the TSU library's using ozone.

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Annotation

Libraries and museums are national treasures that preserve cultural and educational heritage. They often store large amounts of organic materials: paper, cardboard, leather, which create an ideal environment for mold to grow, especially when climate control is not working or is working poorly, which creates an ideal environment for mold to grow. Mold releases enzymes that break down the structure of paper, cardboard, and leather. This leads to discoloration of books, the appearance of stains, the decomposition of pages and, ultimately, their complete biodegradation. As a result, priceless, unique publications are lost forever. Additionally, the spread of mold fungi poses a serious threat to both the library collection and the health of users and librarians. Some types of mold release toxins that can cause allergic reactions, respiratory problems and other health hazards. The aim of this study was to attempt to neutralize mold fungi on collection books stored in the storage of the Iv. Javakhishvili Tbilisi State University's Library using ozone. Similar practices are tested and accepted in museum spaces of Western countries. For the purposes of the research, a device created by Hydrogen Technology was used. We have investigated the dynamics of mold fungi under different ozone exposure times and intensities and determined the complete inactivation of its vegetative and spore forms. Samples were taken from 10 mold-contaminated books both before and after ozone treatment, which enabled quantitative and qualitative analysis of ozone exposure.

The study revealed that the ozone generator developed by Hydrogen Technologies is effective against bacterial contamination, both on surfaces and in the air, when used for the general treatment of library spaces; however, it is insufficient for the complete elimination of mold fungi and their spores. Therefore, for thorough eradication of mold, it is recommended to treat books individually with a targeted ozone flow and to apply additional combined disinfection methods in order to fully clean the substrate (books) from both vegetative cells and resistant forms. This necessitates the development of a specific protocol that will enhance the effectiveness of mold elimination.