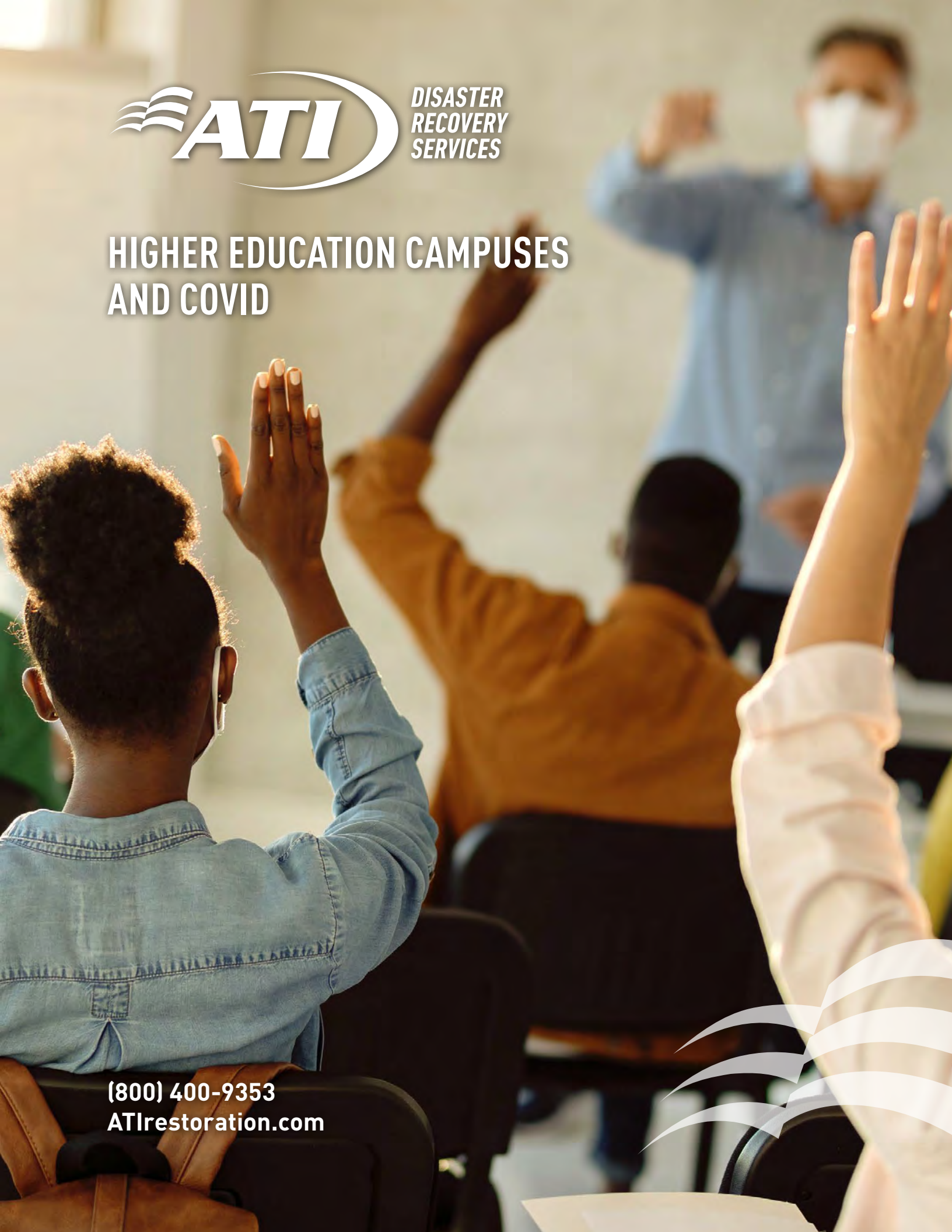
ATI DISASTER RECOVERY SERVICES

HIGHER EDUCATION CAMPUSES AND COVID



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Introduction

As the COVID-19 vaccine becomes more widely available, universities are preparing to resume on-campus studies in the coming weeks. Effects of the pandemic on campuses will be seen as the world's higher education systems have shifted their approach to sanitation, masks, testing, housing, and even infrastructure. In terms of the physical space, many universities have been going through a new set of standards and regulations set forth by the Center for Disease Control (CDC), the Department of Education, the American Rescue Plan, and local jurisdictions. This paper explores the latest policies, procedures, and alterations to infrastructure that schools are exploring to keep faculty, staff, and students safe in physical learning environments.

Higher Education Emergency Relief Fund

As part of the American Rescue Plan, the current administration has introduced the Higher Education Emergency Relief Fund (HEERF II) as a resource for universities to keep campuses safe this upcoming year. In May of 2021, the Department of Education made available $36 billion in emergency aid to public and private non-profit institutions and $396 million to proprietary colleges to serve students and ensure learning continues during the COVID-19 pandemic. These funds focus on student support and safety, requiring universities to use monies to supply financial grants to students, inform students of available aid, or implement evidence-based best practices to monitor and suppress coronavirus in accordance with public health guidelines.

Implementing evidence-based practices is a new criteria added to the approved uses. This criteria allows schools to improve infrastructure solely for COVID-19 purposes, as institutions are not allowed to build new buildings or acquire additional property.

Infrastructure improvements covered include:*

- HVAC system upgrades to help with air filtration
- Purchase or creation of temporary classrooms
- Purchase and installation of "room dividers" within a previously completed building to increase social distancing
- Setting up testing and vaccination sites on campus
- Cleaning and disinfecting the buildings
- Redesigning food service stations
- Modifying a building's layout and adding temporary barriers

*https://www2.ed.gov/about/offices/list/ope/arpfaq.pdf

Ventilation

Upgrading ventilation systems is a primary infrastructure change to make campuses safer, requiring a variety of practices and procedures that are both natural and mechanical. Having a Heating, Ventilation and Air Conditioning (HVAC) restoration and cleaning company assess the campus is optimal in creating a plan. These professionals can assess the current air circulation systems and filters and give you recommendations to optimize airflow. The combination of improving both natural and mechanical air circulation will best deliver a safer experience for everyone.

Given CDC and the Department of Education recommendations, and experience from the disaster recovery industry, increasing airflow and recommended improvements to HVAC systems include:

1. Open windows and doors, if safe to do so, to increase the introduction of outdoor air. Even cracking open a window or door helps increase outdoor airflow, which reduces the potential concentration of virus particles in the air.
2. Use fans to increase the effectiveness of open windows.
3. Consider having activities, classes, or seminars outdoors when circumstances allow.
4. Make sure your ventilation systems are serviced and meet code requirements. They should provide acceptable indoor air quality, as defined by American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62.1, for the current occupancy level for each space.
5. Increase the HVAC system's total airflow supply to occupied buildings and spaces when you can.
6. Disable demand-controlled ventilation (DCV) controls that reduce air supply based on occupancy or temperature. This way, the air supply will remain constant throughout the day.
7. For simple HVAC systems controlled by a thermostat, setting the fan control switch from "Auto" to "On" will ensure the HVAC system provides continuous air filtration and distribution.
8. Consider running the HVAC system at maximum outside airflow for 2 hours before and after the building is occupied to refresh air before arrival and remove remaining particles at the end of the day.
9. Consider portable air cleaners that use high-efficiency particulate air (HEPA) filters to enhance air cleaning wherever possible, especially in higher-risk areas such as a nurse's office or sick/isolation room.

Outdoor air is the easiest and most affordable ventilation solution. Capitalize on months with better weather, opening all windows in classrooms and doors that lead outside. Even cracking open doors and windows is proven to improve circulation. For interior classrooms or classrooms with few windows for ventilation, it is recommended universities shift their resources and relocate lectures to forums such as a sports complex, large lecture hall, or cafeteria. Professors and lecturers may open windows and doors or at least space out their students.

A NEW REPORT FROM THE U.S. GOVERNMENT ACCOUNTABILITY OFFICE (GAO) SHOWS THAT AN ESTIMATED 54% OF PUBLIC SCHOOLS NEED TO UPDATE OR REPLACE LEGACY SYSTEMS IN THEIR SCHOOLS, WITH HVAC SYSTEMS TOPPING THE LIST.

The National Energy Management Institute in Fairfax, VA put out a list of specific HVAC problems schools are currently experiencing, including:

- Closed outside air dampers. It is common on an excessively hot or cold day for an untrained technician to close the outside air dampers so the HVAC units can maintain the desired thermal comfort setpoints; however, these dampers can be left closed for years.
- Neglected maintenance on filters, belts, and condensate drainage.
- Building Automation System (BAS) controls may have been manipulated over the years, and the initial settings are never reinstated.
- Occupant use changes. A classroom with an outside air supply (OSA) rate designed for 30 students may now be used for 40 students. When these changes happen, the settings should be set accordingly, but they are often forgotten.

Many campuses utilize quickly available and affordable labor to handle mechanical issues in lieu of professionals. This can compromise the ability of the system to work efficiently. It is crucial that facilities teams find HVAC-certified professionals who know how to perform a thorough evaluation of the system and know how to test and balance systems for optimal performance at the change of every season and school year. Picking filters for such large systems also requires professional expertise, as many on-site janitors or technicians may not know the system's ability to handle a specific type of filter.

Temporary Barriers

Temporary barriers have been a crucial tool in coping with COVID-19 on college campuses. As students return and variants present themselves, some administrators opt for fast solutions to serve more people while keeping everyone safe in the busy campus environment. There are various panel systems that help universities turn larger areas with better ventilation into temporary classrooms, mitigating the need to use smaller classrooms with no windows and poor HVAC systems.

Most universities opt for a conventional fire retardant visqueen system, a short-term and economical solution. They may also opt for a prefabricated panel system that is versatile, providing quick and cost-effective installation. Made of stainless steel, they are insulated for added noise reduction so classrooms are not interrupting one another. Coroplast panel systems offer another level of barriers for medical buildings or healthcare classes that could expose more risks. It is a simple mounting system that makes for fast installation and creates an airtight seal that exceeds many medical barrier requirements. It is tougher than corrugated fiberboard, lighter than solid extruded plastic, waterproof, weather-resistant and stain-resistant, making it ideal for temporary walls and partitions. Suitable for long-term containment projects in a university hospital or medical setting, this system can help redirect patient traffic and provide a more permanent solution. The drywall barriers can be insulated to reduce overall noise within the contained space. All drywall barriers can be painted or have fire-rated wall protection installed on them in order to meet additional healthcare guidelines.

For more robust options in medical settings, see our paper on Infection Control Risk Assessment (ICRA) barriers.

Automatic Electrical and Plumbing Systems

If one were to trace a student's illness back to the source of contamination, there are a few common campus culprits: light switches, sink faucets, toilet flushing handles, buffets at food halls, self-serving drink stations, water fountains, etc. These spots are commonly touched by many. Today, many of these features have automatic options and upgrades, mitigating the need for multiple people to touch a common surface. Many of these automatic options are also long-term energy (and cost) saving options.

According to several studies, these are the most contaminated spots with mechanical, engineering, and plumbing (MEP) systems on a college campus:

BATHROOMS:

Every time you flush, a spray of bacteria-filled droplets flies out into the bathroom air, which can coat surfaces near and far from the toilet. Adding the many fingers that touch it, schools should consider installing automatic motion-detecting flush mechanisms, hand dryers, and paper towel dispensers. They might also consider implementing more thorough barriers between toilets and other areas in bathrooms to keep airborne particles to a minimum from flushing.

WATER FOUNTAINS:

A 2010 Journal of School Nursing study on surfaces in schools found that water fountain toggles carried the most bacteria of any school surface, including toilets. Motion sensor fountains and automated water dispensers for water bottles are growing in popularity and provide more options.

FAUCETS:

The International School Frankfurt found these were one of the most germ-infested surfaces in schools. Motion sensor faucets are becoming a more affordable and safer option.

LIGHT SWITCHES:

In the Public Library of Science Journal (PLOS One) study of 80 samples, about 2.5% of light switches tested positive for the bacteria that causes staph infections. Motion sensor lights are not only a more sanitary option but more environmentally friendly.

DOOR HANDLES:

In the PLOS One study of 40 samples, about 5% of door handles tested positive for the bacteria that causes staph infections, and germs can live up to 2 hours on many handles. Install doors with sensors to open at the entrance of active buildings and crowded halls.

TOUCH SCREENS AND PIN PADS FOUND IN DINING HALLS WERE TECHNOLOGICAL UPGRADES THAT INCREASED ISSUES. TESTS ON SCREENS AT EIGHT RESTAURANTS FOUND FECAL BACTERIA THAT CAUSE THE KINDS OF INFECTIONS YOU CAN PICK UP IN A HOSPITAL (ENTEROCOCCUS FAECALIS), AS WELL AS STAPHYLOCOCCUS, WHICH CAN CAUSE BLOOD POISONING.

Deep Cleaning and Sanitizing

The cleaning industry has come a long way, especially after the pandemic. Germs are everywhere, and the solution must account for sensitive skin. Deep cleaning and surface cleaning on large campuses involve various solutions, including general sanitizer solutions, industrial disinfectants, electrostatic sprayers, fogging, and more. Commercial cleaning services use CDC guidelines and understand the most problematic surfaces in schools to decide the type of disinfectant they'll use and how often.

Schools may opt for general custodian services to wipe down surfaces in the moment they are used, but many schools are looking into enhanced solutions outside of school hours. Electrostatic sprayers and infrared light technology kill germs without using potent chemicals and can be completed when students are out of school.

COMMON AREAS WITH A HIGH CONCENTRATION OF GERMS:

RECREATION CENTERS AND GYMS:

Germs move from our skin to surfaces, most often from free weights and elliptical handles. In addition to requiring students to wipe down equipment, regular large-scale disinfection for the entire center is recommended.

BATHROOMS:

In one study, school sink countertops were tested, revealing consistently high levels of various contaminants that were common sources of illness. On bathroom floors, though an obvious place for germs, the bacteria for staph infections (untreatable with penicillin) showed up on 12.5% of samples taken from a study by PLOS One in 2018.

DORMITORIES:

About 37% of dormitory shared kitchen refrigerators and dorm room refrigerators tested positive for fecal contamination. About 56% of students claim they never clean their dorm room fridge. A study conducted by dormsmart.com found student desks contained 60x the germs than on public restroom toilets. High-touch cleaning services for dorm rooms mitigate the risk of germs spreading throughout dormitory halls.*

*WebMD and dormspot.com

Closing

Many of these new standards are recommended by the CDC, but they are set into place by the local jurisdiction and the university's facilities team. Most regulations focus on proper ventilation and the increased introduction of outdoor air to teaching spaces, high-touch and large-scale decontaminating services, modified classroom layouts or locations, temporary barriers, and better automatic electrical and plumbing systems to prevent high-traffic touch-points. Schools are required to have a clear COVID prevention plan to keep students and faculty safe, especially if utilizing the American Rescue Plan's funding.

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