FACILITY RISK EVALUATION & MAINTENANCE LIST

TDIndustries

From HVAC systems to electrical systems, plumbing and refrigeration, keeping up your facility's health is never easy.

There are always risks of failure and inefficiencies as equipment is used over time.

To keep your facility running smoothly without downtime or unexpected equipment breakdowns, we cover the primary risks to watch and why certain maintenance steps are critical for you to schedule or do yourself.

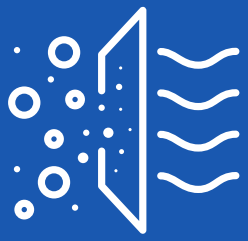
DIFFICULTY KEY

Each maintenance step is given a level-of-difficulty score, which indicates whether or not a professional staff is required or recommended for a specific task.

Easy ..... Professional maintenance staff recommended, but optional.

Moderate .... Professional maintenance staff required

Expert ..... Professional maintenance staff is critical



HVAC

REPLACE AIR FILTERS

WHY IT'S IMPORTANT:

As simple as this step appears, the air filter is critical to the function of an HVAC system by preventing airborne contaminants from insulating and blocking heat transfer at the evaporator coil.

If dust and other particles find their way to the evaporator coil, the compressor must expend more energy to transfer heat and perform the HVAC system's cooling function, dramatically cutting its lifespan.

Additionally, though maintaining air quality isn't the primary purpose of an HVAC air filter, airborne contaminants like dust and pollen in an HVAC system can negatively affect the health of facility occupants if left unchecked.

POTENTIAL RISKS WHEN NOT MAINTAINED:

Premature compressor failure is a major risk if air filters are not replaced regularly ($8000-$20,000 replacement expense). When properly maintained, a typical facility HVAC system's lifespan will extend to 15 years or more. The lifespan reduces to 8 years or less when air filters and additional HVAC maintenance is neglected. Contaminants in the air can also lead to sick building syndrome, resulting in asthma and upper respiratory problems for occupants in extreme cases.

Maintenance Frequency

QUARTERLY

Level Of Difficulty

MODERATE

HVAC

CLEAN CONDENSER AND EVAPORATOR COILS

WHY IT'S IMPORTANT:

Condenser and evaporator coils are essential in the HVAC system's heat transfer process, though they serve different functions. The evaporator coil is the point at which liquid refrigerant absorbs heat, which cools the air that is sent throughout the facility. This process of absorbing heat changes the refrigerants state from liquid to gas.The gas refrigerant then enters the compressor itself, where the refrigerant is pressurized and becomes very hot. From there, the heated gas is transferred through the condenser coils where refrigerant is cooled and heat is released outside of the facility.

In order to keep the coils functioning properly, they must be cleaned so that dust and other airborne contaminants don't interfere with the coils' ability to release heat.

Ice on an evaporator coil could also be a sign of poor airflow, a dirty air filter, or low levels of refrigerant. If the air filter is changed regularly, the coils will require only light cleaning.

POTENTIAL RISKS WHEN NOT MAINTAINED:

If condenser and evaporator coils aren't cleaned on at least an annual basis or when absolutely necessary, then the condenser unit could prematurely fail ($8000-$20,000 replacement cost).

Maintenance Frequency

ANNUALLY OR AS NEEDED

Level Of Difficulty

MODERATE

HVAC

CHECK REFRIGERANT LEVELS

WHY IT'S IMPORTANT:

Refrigerant is the main vessel for heat transfer in an HVAC system. Contained in the condenser and evaporator coils, refrigerant is responsible for cooling and dehumidifying the air.

The refrigerant charge must be checked periodically to determine if a) there is enough for the HVAC to maintain correct temperatures, and b) to ensure that there are no refrigerant leaks.

Additionally, the oil used to lubricate the compressor is in the refrigerant.

POTENTIAL RISKS WHEN NOT MAINTAINED:

If refrigerant levels are too low, frost can appear on the coils or the coils will freeze altogether. As the main agent for heat transfer, a low or high level of refrigerant will prevent the HVAC from cooling the air effectively as proper heat transfer will no longer be possible. Finally, low refrigerant can cause the compressor motor to break down completely, resulting in a total system failure.

Maintenance Frequency

QUARTERLY

Level Of Difficulty

EXPERT

HVAC

CLEAN FURNACES AND LEAK CHECKS

WHY IT'S IMPORTANT:

The combustion process within heating units releases carbon monoxide (CO), a toxic and odorless gas. This gas is usually guided out of a unit via a flue vent, although serious problems can occur if the vent becomes clogged with debris or a gas leak is discovered via carbon monoxide detectors.

A furnace cleaning and unit maintenance check will determine that the furnace is not only functioning properly, but that the products of combustion are ventilated properly and that no leaks exist.

POTENTIAL RISKS WHEN NOT MAINTAINED:

If the flue vent is clogged or a gas leak occurs, carbon monoxide can build up within the facility and become a serious danger to occupants. Cracks in the combustion chamber might not be detectable without the help of a trained maintenance staff, but could escalate into a fire hazard if not caught quickly.

Maintenance Frequency

ANNUALLY (BEFORE HEATING SEASON)

Level Of Difficulty

MODERATE

ELECTRICAL & LIGHTING

VISUAL ELECTRICAL AND LIGHTING INSPECTION

WHY IT'S IMPORTANT:

This simple light check can be performed either by facility staff or by a maintenance crew. Indoor lights can be inspected during daytime hours while outside lights must be checked early in the morning or after hours.

It's recommended that lights are assigned numbers and charted to keep an exact account of inventory.

POTENTIAL RISKS WHEN NOT MAINTAINED:

Failure to regularly conduct a visual lighting and electrical inspection can result in visual defects (light outages). More importantly, malfunctioning lights present serious security and safety risks if not immediately addressed. If an injury occurs in an area with defective lighting, the facility owners can be held liable.

Maintenance Frequency

MONTHLY

Level Of Difficulty

EASY

ELECTRICAL & LIGHTING

CHANGE THE BALLASTS AND LAMPS

WHY IT'S IMPORTANT:

Though lamps and ballasts will need to be replaced anyway because of their limited lifespans, replacing lighting fixtures remains one of the most effective ways for facilities to improve their energy efficiency.

More efficient bulbs (LED) and ballasts become available on a regular basis, so facilities can quickly realize a return on their maintenance investment.

POTENTIAL RISKS WHEN NOT MAINTAINED:

A failure to consistently replace lights will result in visual defects (broken lights) and higher long-term energy costs. Periodically replacing lights with more effective models will lead to better output and extended longevity.

Maintenance Frequency

QUARTERLY

Level Of Difficulty

MODERATE

ELECTRICAL & LIGHTING

PREVENTATIVE MAINTENANCE INFRARED SCANS

WHY IT'S IMPORTANT:

The infrared electrical systems survey can more efficiently and effectively track the performance of large amounts of electrical equipment than a standard manual inspection. Through a infrared preventative maintenance scan, staff members can spot electrical system problems related to panels, switchgear, breakers, starters, contactors, disconnects, motors, and more.

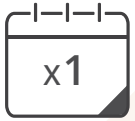
This is the most effective method for preventing outages, equipment failures, occupant hazards, and other emergencies before they happen.

This is a non-invasive preventative measure, so facility operations won't be interrupted during the test.

POTENTIAL RISKS WHEN NOT MAINTAINED:

When a thorough electrical system check isn't performed annually, a facility can run a serious risk of power outages (including a disruption of facility operations), fire safety device malfunction, fire hazards, and equipment failures (i.e. HVAC).

Maintenance Frequency



ANNUALLY

Level Of Difficulty

EXPERT

ELECTRICAL & LIGHTING

CIRCUIT BREAKER/SWITCHGEAR TESTING

WHY IT'S IMPORTANT:

The switchboard is the primary hub of a facility's electrical system and contains multiple key components (terminal connections, trip unit, disconnectors, operating mechanism, etc.).

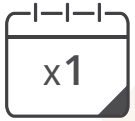
The function of the switchboard is vital for protecting a facility's electrical systems and ensuring that electrical power is safely distributed to electrical devices.

The switchboard regularly facilitates high voltage electrical currents, which can stress the components over time and presents a greater sense of urgency for regular maintenance.

POTENTIAL RISKS WHEN NOT MAINTAINED:

The hazards of not maintaining a switchboard can compromise occupant safety, putting people at risk of fires and electrocution in the worst cases. Other issues include the premature breakdown of the switchboard as well as any connected equipment. There is also the potential for unexpected power outages.

Maintenance Frequency



ANNUALLY

Level Of Difficulty

EXPERT

COMMERCIAL REFRIGERATION

CLEAN THE EVAPORATOR AND CONDENSER COILS

WHY IT'S IMPORTANT:

The basic heat transfer process for Commercial Refrigeration involves the same components and principles as it does in HVAC application. The primary difference results from the lower temperatures that the system must maintain.

As in HVAC application, it is important to keep the evaporator and condenser coils clean.

However, in a commercial kitchen environment, contaminants like grease are present. This increases the maintenance frequency from annual to quarterly.

POTENTIAL RISKS WHEN NOT MAINTAINED:

Unclean coils will cause a cooler's compressor to use more energy than necessary to keep proper temperatures. Over time, this can cause a costly compressor failure. Coolers will typically have a lifespan of 10-12 years, but a lack of maintenance could cut this estimate to 5 years.

Maintenance Frequency

QUARTERLY

Level Of Difficulty

MODERATE

COMMERCIAL REFRIGERATION

VISUAL INSPECTION/REPAIR FOR WEAR AND TEAR

WHY IT'S IMPORTANT:

Coolers and batch freezers go through substantial abuse in a high-intensity kitchen environment, but some wear and tear can manifest into problems that can lead to complete system failure or reduced performance.

A trained maintenance staff member can distinguish the benign wear from the more serious problems.

A cooler or freezer door that doesn't shut completely and stays ajar is one common example of an issue that requires urgent repair.

POTENTIAL RISKS WHEN NOT MAINTAINED:

Specific wear and tear, like a door that won't shut correctly, can be catastrophic to long-term cooler performance. Not only will the cooler not be able to maintain proper temperatures, but facilities could lose hundreds or thousands of dollars in perishable goods. Even if a cooler does maintain temperatures, it will expend more energy and will break down sooner.

Maintenance Frequency

QUARTERLY

Level Of Difficulty

EASY/MODERATE (SITUATIONAL)

PLUMBING

CHECK FOR LEAKING OR CORRODED PIPES

WHY IT'S IMPORTANT:

Highly corroded pipes, which can be common in older facilities, should be replaced before they become further compromised or serious leaks occur.

Pipes can be checked as often as a customer wishes, but are recommended on a quarterly basis.

This check can be done with the use of a sewer pipe camera. Lime scale around faucets can be a signal that a facility's pipes have seen better days.

POTENTIAL RISKS WHEN NOT MAINTAINED:

Unaddressed leaks can not only lead to thousands of gallons of wasted water a year, but could also be the root cause of foundation issues, flooring failures, and the buildup of mold and mildew.

Maintenance Frequency

QUARTERLY

Level Of Difficulty

EXPERT

PLUMBING

CHECK WATER PRESSURE

WHY IT'S IMPORTANT:

Ideally, water pressure will hover around 50-60 psi on average.

Water pressure that's too high can result in pipe damage and a higher propensity for leaks.

Low pressure results in the improper function of plumbing fixtures.

Semi-open valves, leaks, and clogging can all lead to low water pressure. In the reverse, low water pressure can also be a signal of greater plumbing problems occuring within a facility.

POTENTIAL RISKS WHEN NOT MAINTAINED:

High water pressure that goes unchecked could cause pipe leaks, which in turn could lead to costly water damage and water loss for the facility. Low water pressure can lead to malfunctioning plumbing fixtures and, shortly thereafter, unhappy occupants.

Maintenance Frequency

MONTHLY

Level Of Difficulty

EASY

PLUMBING

WATER HEATERS AND BOILER VALVE CHECK

WHY IT'S IMPORTANT:

Commercial water heaters and boilers play an important function in the facility's water supply (heated water), but are susceptible to corrosion, leaking, and overheating as they age.

The boiler valves prevent hot water from circulating through the system at the wrong times, but can occasionally malfunction and require replacement.

POTENTIAL RISKS WHEN NOT MAINTAINED:

In many cases, water heater and boiler valve checks are required by local or state law. Commercial boilers and water heaters naturally deteriorate over time, but avoiding regular servicing can lead to the premature breakdown of the boiler and additional maintenance costs. In a worst-case scenario, an overheating boiler can become a legitimate fire hazard.

Maintenance Frequency

ANNUALLY

Level Of Difficulty

EXPERT

REMEMBER SAFETY IS CRITICAL

While equipment longevity, facility operations, and reducing costs are all powerful incentives for preventative maintenance, occupant safety should be incredibly important to any facility manager or owner. By scheduling regular preventative maintenance tests and repairs, not only can you keep your long-term costs lower, but you can also have the peace of mind that whoever enters your facility will be safe from harm. You can't put a price on that.