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## COVID-19 Disinfection of Electronic Equipment

Protective, washable, barrier covers, sleeves, or guards such as plastic baggies over microphones, LCD covers, etc., should be employed wherever possible on equipment. Such covers can then be removed for either disposal or separate disinfection for re-use without having to disinfect the electrical or electronic equipment itself.

Many manufacturers of electrical equipment have prepared instructions for the cleaning and disinfection of their specific equipment or devices--those directions should be sought out and followed, if available, and the product owner's manual consulted.

The general recommended procedures for cleaning electronic equipment follow:

### Preparation and General Precautions

- Turn off the device and disconnect from AC power. Remove any batteries from items like wireless keyboards or mice;
- Never spray any liquids directly onto or near the electrical components of the equipment or devices. LCD screens are not made of glass and are not impervious;
- Do not use spraying, fogging, electrostatic, or other wide-area sprays on electrical equipment as that may cause damage to exterior or interior components. Aerosol sprays (spray cans with propellant) or compressed air may aerosolize any viral particles and should be avoided;
- If the detergent or disinfectant is provided in a sprayer, do not spray the cleaner (or disinfectant) directly on the device (or submerge it in the solution)--instead spray the cleaner/disinfectant onto a cloth so you don't risk getting unwanted moisture in any places where it shouldn't be;
- You should avoid using window cleaners, as well as cleaning products with abrasives, chlorine, acetone, ammonia, or bleach, as these may discolor or otherwise harm your devices;
- The effectiveness of disinfectants is diminished if the surface is dirty. If the surfaces are visibly dirty (dust, soil, mucous, etc.) the device should first be cleaned using a lint-free cloth or wipe moistened with a detergent solution—preferably followed by rinsing with a water-moistened wipe. The wipes must not be saturated or dripping the detergent or rinse solutions. Moisture entering the inside of an electronic product can cause damage to the device;
- Remember that disinfectants require care in their use. For example, alcohol solutions are flammable and should not be used near possible sources of ignition. Other disinfectants are sensitizers, corrosive, or irritants and must be handled properly to prevent exposure to the user.

## Disinfection Procedure

- Alcohol solutions are probably the most common disinfectant for use on electronics or electrical equipment. Unless using a commercially available disinfectant wipe, moisten a microfiber cloth or lint-free cloth towel with an isopropyl alcohol solution (70% solution) or ethyl alcohol solution (60-70% solution) with the balance being clean water. Do not apply 100% alcohol as that is less effective and evaporates too quickly;
- If not using an alcohol solution as described above, a disinfectant solution or wipe registered for use against coronavirus that appears on [EPA's List N, Disinfectants for Use Against SARS-CoV-2 \(COVID-19\)](#) may be used. Examples include accelerated hydrogen peroxide (AHP) products such as Oxivir®, Percept Wipes®, Virox RTU®, or Accel®. Be sure to follow the specific product's label instructions.
- Be aware that some cleaning wipes such as CaviWipes®, Lysol®, and Green Works® may leave a residue which can compromise the keys and effect internal electronics;
- Make sure whatever you're using for a wipe to apply the disinfectant solution is soft and lint-free – avoid paper towels or abrasive items. Microfiber cloths are best;
- The disinfectant application cloth or wipe should be damp, but not dripping wet. Excess moisture should be removed if the cloth or wipe is too wet or dripping before use near any exposed or accessible electrical devices, circuitry, or wiring. The solution may be applied more liberally (or by other means of application) to other surfaces where any electrical components are protected such as exterior equipment casings or cabinets;
- Slowly and thoroughly wipe the moistened cloth on the surfaces to be cleaned. Do not allow any moisture to drip into areas like keyboards, display panels, etc. Some devices, like microphones or a computer mouse, may be held or suspended upside down to prevent entry of the detergent or disinfectant into the equipment;
- Gently wipe all hard, nonporous surfaces (display, keyboard, frame, mouse casings, etc.) on devices. You don't need to scrub or press hard if the surface is clean.
- You may want to test on fabric, leather, or other porous surfaces to make sure this won't damage them (a mild solution of soap and water may be all that is necessary for such surfaces).
- Don't clean inside any ports or openings to the circuitry – if you need to remove soil from these then use a dry cloth. Remember that it is only necessary to clean surfaces that are likely to be contacted by the hands (or faces) of users;
- When cleaning a display screen, carefully wipe in one direction, moving from the top of the display to the bottom;
- The surface(s) being disinfected must remain wetted for at least 1 minute with an alcohol solution; or, if using an EPA-registered disinfectant, for the contact time

specified on the product label. The disinfectant product may need to be re-applied in order to afford the required contact time to do its job if it evaporates too quickly;

- After cleaning and disinfecting a glass or other hard transparent surface, it may be cleaned again using a microfiber cloth and water, or using a glass cleaner designed for display surfaces. Be sure to follow the directions for that specific cleaner. It is recommended you avoid using glass cleaning products containing ammonia;
- Surfaces must be completely air-dried before turning the device on after cleaning and/or disinfection. No moisture should be visible on the surfaces of the product before it is powered it up, plugged in, or the batteries replaced;
- Porous surfaces such as pop filters, foam windscreens, etc., may merely be washed with a detergent and warm water and then allowed to dry for a minimum of 72 hours.

### **Personal Protection**

The use of splash-proof goggles and disposable gloves is necessary for the above procedures along with **frequent hand washing**. A gown or apron may be advisable depending on the condition and configuration of the equipment being cleaned and disinfected. If the equipment is grossly contaminated by mucous or has been in use by an individual known or suspected to have been infected by, or exposed to, the COVID-19 virus--an N95 respirator may be advisable. A better alternative though, would be to first quarantine the piece of equipment for at least five (5) days prior to handling, cleaning, or disinfecting the device. Following that time period any viral particles would no longer be viable (able to infect). Cleaning and disinfection of the equipment may then be safely performed.

### **Final Comments**

The SARS-CoV-2 virus that causes the COVID-19 pandemic is very susceptible to disinfectants when properly applied to clean surfaces. Extreme measures or the use of harsh high-level disinfectants is not necessary to destroy or inactivate this virus. Only those surfaces of equipment likely to be physically contacted by users require disinfection.

However, failure to clean and disinfect common touch surfaces of electronic equipment could lead to an accumulation of soil, mucous, and other contaminants on those devices that may protect or support the viability of not only the COVID-19 virus--but also other pathogenic viruses and bacteria.

The *National Electrical Manufacturers Association* has produced a [\*COVID-19 Cleaning and Disinfecting Guidance for Electrical Equipment\*](#). It should be noted though that the safety and effectiveness of ultraviolet light irradiation is not documented against this virus; and, regardless, is only to be performed following cleaning and disinfection of the equipment surfaces to be exposed.