4 Types of Cleaning Agents and When To Use Them

Different cleaning agents are used depending on the item to be cleaned, the cleaning method and the type of soiling found on the item.

June 12, 2017

Maintaining a regular cleaning and sanitizing schedule is integral to preventing cross-contamination and food-borne illness. There are four main types of cleaning agents used in commercial kitchens:

1. Detergents
2. Degreasers
3. Abrasives
4. Acids

For effective cleaning, be sure to use the correct cleaning agent for the type of item to be cleaned, the cleaning method you'll be using and the type of soiling on the item. Learn about the four most common types of cleaning agents and when to use them.

1. Detergents

Detergents are the most common type of cleaning agent and are used in home and commercial kitchens. They work by breaking up dirt or soil, making it easy to wash it away.

The detergents used in commercial kitchens are usually synthetic detergents made from petroleum products and may be in the form of powder, liquid, gel or crystals.

2. Degreasers

Degreasers are sometimes known as solvent cleaners and are used to remove grease from surfaces such as oven tops, counters and grill backsplashes.

Methylated spirits or white spirit were commonly used as degreasers in the past. Most food businesses now try to use non-toxic, non-fuming degreasers in their operations to prevent chemical contamination.

3. Abrasives

Abrasives are substances or chemicals that depend on rubbing or scrubbing action to clean dirt from hard surfaces. In commercial kitchens, abrasives are usually used to clean floors, pots and pans.

Abrasives should be used with care as they may scratch certain types of materials used for kitchen equipment such as plastic or stainless steel.

4. Acids

Acid cleaners are the most powerful type of cleaning agent and should be used with care. If they are not diluted correctly, acid cleaners can be very poisonous and corrosive.

Acid cleaners are generally used to remove mineral deposits and are useful for descaling dishwashers or removing rust from restroom facilities.

Properly handling cleaning agents

Remember that exposure to chemicals used in cleaning agents can lead to skin irritations, chemical poisoning, respiratory problems and, in extreme cases, even death. In a food business, all employees should be properly trained in understanding chemical hazards, how to handle products safely and what personal protective equipment should be worn when handling the product. Best practices for handling cleaning agents include:

- storing chemicals in a secure place in their sealed original containers, well away from food or any equipment may come into contact with food
- wearing personal protective equipment required to be worn when handling the product, such as gloves or safety glasses
- following the manufacturer's instructions when using the product or disposing of the product

following the manufacturer's instructions when using the product or disposing of the product

- cleaning and sanitising cleaning equipment such as brushes, mops and other janitorial tools after use and storing them in a well maintained, dry, locked area
- using different cloths for wiping and cleaning, and replacing them regularly

Always follow cleaning with sanitizing

Cleaning is only the first step to a germ-free kitchen. Cleaning is done using detergent, but it doesn't kill bacteria or other microorganisms that can cause food poisoning. To kill bacteria and ensure a clean workplace, you must follow cleaning with sanitizing.

Effective cleaning and sanitizing also helps to:

- prevent pests from entering your business
- prevent cross-contamination
- prevent allergic reactions caused by cross-contamination

Make sure everyone who handles food in your business knows **how to clean and sanitize properly (https://www.foodsafety.ca/blog/are-you-properly-cleaning-and-sanitizing-your-kitchen-surfaces)** and why it's important. Keep a regular **kitchen equipment cleaning schedule (https://resources.foodsafety.ca/templates/kitchen-equipment-cleaning-schedule)** to keep track of daily, weekly and monthly tasks.

Enrolling your staff in a food handling course can help to ensure that your business stays compliant with food safety laws and regulations, passes health inspections and protects customers from health risks like allergic reactions and food poisoning.

The Canadian Institute of Food Safety (CIFS) provides online food safety courses that are approved in every province and territory in Canada. For more information about our Food Handler Certification Course, **contact us (https://www.foodsafety.ca/contact)** or view our **food handling certificate course (https://www.foodsafety.ca/courses/food-handler-certification-course)** page.

(/contact)

We're here to help

1 800 505 9145 (tel:1-800-505-9145)

Canadian Institute of Food Safety

77 Bloor St West, Suite 600

Toronto, Ontario, M5S 1M2, Canada

(https://www.linkedin.com/company/canadian-institute-of-food-safety/)
(https://www.facebook.com/canfoodsafety/)

AIR CABIN CLEANING AND DISINFECTION

IN BRIEF

- **THE RISKS:** While not a primary route, infection can occur if SARS-CoV-2 virus on surfaces is transferred by touch to facial mucous membranes: eyes, mouth, and/or nose. Intact skin is considered a barrier to viral entry. Reducing risk is a responsibility of both the airline and the individual.
- **AIRLINE RISK REDUCTION:** Airline service teams should focus cabin cleaning on high-frequency touch surfaces, with systematic disinfection of surfaces between flights or on a daily basis. When administered properly, the active ingredients in approved disinfecting agents are effective in eliminating viruses on surfaces.
- **INDIVIDUAL RISK REDUCTION:** Passengers and workforce personnel can reduce transfer from contaminated surfaces by frequent hand washing with soap, use of hand sanitizers and avoiding touching their face. Wearing a mask and physical distancing are very important ways to reduce risk of infection.
- **THE MULTI-LAYERED STRATEGY:** Disinfecting the cabin is part of a multi-layered aviation public health risk-reduction strategy. This includes screening and health attestations to help exclude symptomatic people, use of advanced ventilation and filtration systems on aircraft, and personal protections such as wearing facemasks and good hand hygiene. The combination of interventions has additive benefits that, taken together, offer significant protection against respiratory infections including COVID-19.

COVID-19 infection: direct vs. indirect contact

COVID-19 is an infectious respiratory disease caused by the SARS-CoV-2 virus. Millions of people have been infected with the virus and many thousands worldwide have died as a consequence.[1-3] More than 50% of infected individuals are asymptomatic or have mild symptoms.[4-6] Those with a mild disease may be unaware that they are infected and able to spread the virus.[5] SARS-CoV-2 is transmitted when respiratory droplets (>5 µm in diameter) or aerosols (≤5 µm in diameter) containing the virus are exhaled from infected individuals while speaking, coughing, and/or sneezing.[7-9]

Individuals may become infected by direct contact with respiratory particles from a contagious person, for example, inhaling aerosols or droplets containing SARS-CoV-2.[5,7,8] Some may land on surfaces, or become transferred to objects touched by an infected individual.[10,11] Contaminated surfaces that can transfer disease to a new host are called 'fomites'. Individuals could become infected with SARS-CoV-2 by touching a surface contaminated with the virus and then transferring it to their mouth, nose and/or eyes.[3,10,12,13] Fomites can continue to harbor infectious viral particles until surfaces are disinfected or the virus naturally degrades over time.[14,15]

Research suggests that contact with a fomite accounts for less than 10% of the overall risk of transmission of SARS-CoV-2 in certain settings.[16] However, scientists continue to caution that until more information is obtained, transmission from surfaces should be considered relevant.[13,17,18] Diligent use of **Non-Pharmaceutical Interventions** (NPIs), including disinfection, is therefore recommended as an effective addition to a comprehensive public health risk-reduction strategy.[19,20,21]

In the absence of medical therapies to counteract SARS-CoV-2, airlines can diminish the risk of infection by combining NPIs, or 'layering' them to secure additive benefits. Minimizing virus particles in the environment by frequent cleaning and disinfection of high-touch surfaces can help mitigate the spread of infections via fomites in the aircraft cabin.[14] The disinfecting agents used should be those approved for safety and efficacy by governmental agencies, and recommended by industry oversight bodies.[22-24]

Current research in infection control[15,17,25-27] recommends enhanced cleaning be combined with other risk reduction strategies by airports, airlines, passengers, and aircraft crewmembers to minimize the amount of infectious virus in the environment. These include the use of approved masks, health screenings (temperature checks, health attestations), increasing ventilation and enhancing filtration on aircraft and in the airports.[23,24,28-31] Additionally, travelers should take responsibility themselves for effective hand hygiene to reduce further the risk of viral transfer from surfaces.

SARS-CoV-2 survival times on different materials

The length of time a virus such as SARS-CoV-2 will survive in the environment depends on a number of factors. These include the type of material it deposits upon, environmental conditions to which they are subjected (e.g., temperature, UV light, humidity[12,32]), amount and composition of any carrier fluid (e.g., saliva, mucous[15,33]), and the quantity of virus deposited.[33] As such, how long a virus particle can survive on a surface is highly variable.

A recent study found SARS-CoV-2 survived on cloth for 2-days, 4-days on glass, and 7-days on stainless steel and plastic.[34] Another study reported the virus survived for up to 3-days on plastic and stainless steel, was undetectable on copper after 4-hours and on cardboard after 24-hours[35]; an early publication cited shorter survival times.[36] Unfortunately, the experimental conditions used in these studies bear little resemblance to conditions that will be found in real life, primarily due to the suspending medium that was used and the very high concentrations of infectious viral particles applied to very small surface areas under ideal laboratory conditions, may dramatically overestimate the survival time of SARS-CoV-2 on surfaces.[37] Furthermore, many factors can influence the transfer of viruses from surfaces including force of the touch, rubbing, and surface roughness.[11] While SARS-CoV-2 does naturally degrade on surfaces over time, disinfection with appropriate agents is recommended to minimize the risk from infectious viral particles in the environment.[15,21,32,38,39]

Cleaning practices in airplane cabins to reduce indirect transmission of SARS-CoV-2

Airline service teams focus cabin disinfection on high-frequency touch surfaces, as prescribed by current recommendations.[14,25,27] In addition to routine cabin cleaning,[40] high-touch surfaces are systematically disinfected between flights or daily, dependent on the contact frequency of the surface.[29,30] Appropriate disinfectants are those approved by the Environmental Protection Agency (EPA) and effectively inactivate SARS-CoV-2; see EPA List N: Disinfectants for Use Against SARS-CoV-2 (COVID-19).[22]

The EPA List N contains several active ingredients and more than 475 disinfectant products. However, only a few of them are suitable for use on aircraft given the nature of the surfaces and recommended specifications of aircraft manufacturers and SAE International standards. These restrictions ensure that disinfectants are compatible with cabin materials and safe to use at the appropriate concentration, prescribed application method and contact time needed for disinfection. Some disinfectants can oxidize and degrade susceptible materials found in the cabin and should not be utilized aboard aircraft,[23] and most disinfectants are not indicated for use on porous surfaces.[22] Therefore, careful selection of appropriate agents and application method is required. Aircraft manufacturers recommend disinfecting high-touch surfaces in the cockpit and cabin with 70% isopropyl alcohol.[23,29,41]

Aircraft lavatories are high-frequency touch areas, subject to special maintenance and cleaning between flights.[14,30] In addition, several airlines are testing the efficacy of extra disinfection protocols for aircraft. Some airlines are using antimicrobial materials on surfaces[31,42] and/or UV disinfection.[32,38,39] Germicidal ultraviolet irradiation can be used to disinfect air and surfaces on airplanes. SARS-CoV-2 is highly susceptible to germicidal UV – UV C in the 222 nm and 254 nm wavelengths.[38]

Figure 1. High-frequency touch areas of the seat are: 1) seat cushion; 2) seatbelt (buckle, latch and strap on both sides); 3) seatback cushion; 4) headrest, and 5) armrest (including seat recline button).

Figure 2. High-frequency touch areas subject to repeated use during a flight include: 1) tray table latch; 2) tray table; 3) compartment and/or personal entertainment screen, and 4) top edge of the pocket. The surfaces in front of each passenger require special attention, as they pose a higher likelihood of respiratory particle deposition.
Images courtesy of the Boeing Corporation

Recommendations for reducing SARS-CoV-2 infection contact with fomites while traveling

Unbroken skin is a barrier against entry of SARS-CoV-2.[43,44] There is a risk of becoming infected if the virus is conveyed through mucous membranes of the face (mouth, nose and/or eyes). Travelers can protect themselves and others against direct transmission by droplets and aerosols by wearing a mask.[9,45] They can protect themselves against indirect transmission via fomites by:

Being mindful of high-touch surfaces and/or objects in public spaces. While it is not possible to clean and disinfect all potential surfaces a traveler may come into contact with between each trip, a traveler should use hand sanitizer after touching certain types of high-frequency touch surfaces[25] (e.g., door handles, elevator buttons, faucets, self-service kiosks, point-of-sale keypads, security trays, and luggage carts).

Wash or sanitize hands properly and regularly. When handwashing, soap should cover all the surfaces of both hands, including the back of the hand, between the fingers, and under the nails, scrubbing for at least 20 seconds.[46,47,48] Hand sanitizers that contain at least 60% alcohol can be used to inactivate the virus if hand-washing facilities are not readily available.[46,47,49] Both soap and the active ingredients in disinfectants destroy the SARS-CoV-2 virus.[46]

Avoid touching eyes, nose, and mouth. While intact unbroken skin is a barrier to SARS-CoV-2 infection, the virus may still survive on hands.[44] Travelers should avoid touching their eyes, nose, mouth (and mask where worn) as much as possible.[50]

References

1. COVID-19 dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). Johns Hopkins University. https://coronavirus.jhu.edu/map.html. Accessed August 9, 2020.
2. WHO coronavirus disease (COVID-19) dashboard. World Health Organization website. https://covid19.who.int/. Accessed September 11, 2020.
3. Wan B, Zhang X, Luo D, et al. On-site analysis of COVID-19 on the surfaces in wards. Sci Total Environ. 2020;141758. doi: 10.1016/j.scitotenv.2020.141758
4. Ferretti L, Wymant C, Kendall M, et al. Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing. Science. 2020;368(6491);Eabb6936. doi: 10.1126/science.abb6936
5. Prather KA, Wang CC, Schooley RT. Reducing the transmission of SARS-CoV-2. Science. 2020;368(6498):1422-1424.
6. Sommerstein R, Fux CA, Vuichard-Gysin D, et al. Risk of SARS-CoV-2 transmission by aerosols, the rational use of masks, and protection of healthcare workers from COVID-19. Antimicrob Resist Infect Control. 2020;9(1):1-8. doi: 10.1186/s13756-020-00763-0
7. Anderson EL, Turnham P, Griffin JR, Clarke, CC. Consideration of the aerosol transmission for COVID-19 and public health. Risk Anal. 2020;40(5):902-907.
8. Asadi S, Bouvier N, Wexler AS, Ristenpart WD. The coronavirus pandemic and aerosols: Does COVID-19 transmit via expiratory particles? Aerosol Sci Technol. 2020;54(6):1-4.
9. Leung NHL, Chu DKW, Shiu EYC, et al. Respiratory virus shedding in exhaled breath and efficacy of face masks. Nat Med. 2020;26(5):676-680.
10. Santarpia JL, Rivera DN, Herrera VL, et al. Aerosol and surface contamination of SARS-CoV-2 observed in quarantine and isolation care. Sci Rep. 2020;10(1):1-8. doi: 10.1038/s41598-020-69286-3
11. Zhao P, Chan P-T, Gao Y, Lai, H-W, Zhang T, Li Y. Physical factors that affect microbial transfer during surface touch. Build Environ. 2019; 158:28-38. doi: 10.1016/j.buildenv.2019.05.005
12. Otter JA, Donsky C, Yezli S, Douthwaite S, Goldenberg SD, Weber DJ. Transmission of SARS and MERS coronaviruses and influenza virus in healthcare settings: the possible role of dry surface contamination. J Hosp Infect. 2016;92(3): 235-250.
13. Wei L, Lin J, Duan X, et al. Asymptomatic COVID-19 patients can contaminate their surroundings: An environment sampling study. mSphere. 2020;5(3):e00442-20. doi: 10.1128/mSphere.00442-20
14. Lei H, Li Y, Xiao S, et al. Logistic growth of a surface contamination network and its role in disease spread. Sci Rep.2017;7:14826. doi: 10.1038/s41598-017-13840-z
15. Pastorino B, Touret F, Gilles M, de Lamballerie X, Charrel RN. Prolonged infectivity of SARS-CoV-2 in fomites. Emerg Infect Dis. 2020;26(9):2256-2257. doi:10.3201/eid2609.201788.
16. Jones RM (2020): Relative contributions of transmission routes for COVID-19 among healthcare personnel providing patient care. J Occup Environ Hyg. 2020;17(9):408-415. doi: 10.1080/15459624.2020.1784427
17. Karia R, Gupta I, Khandait H, Yadav A, Yadav A. COVID-19 and its modes of transmission. SN Compr Clin Med. 2020;1-4. doi: 10.1007/s42399-020-00498-4
18. Xiao S, Li Y, Wong T-W, Hui DSC. Role of fomites in SARS transmission during the largest hospital outbreak in Hong Kong. PloS One. 2017;12(7):e0181558. doi: 10.137/journal.pone.018558

19. Peyrony O, Ellouze S, Fontaine J-P, et al. Surfaces and equipment contamination by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the emergency department at a university hospital. Int J Hyg Environ Health. 2020;230:113600. doi: 10.1016/j.ijheh.2020.113600

20. Hsieh CC, Lin C-H, Wang WYC, Pauleen DJ, Chen JV. The outcome and implications of public precautionary measures in Taiwan—declining respiratory disease cases in the COVID-19 pandemic. Int J Envir Res Public Health. 2020;17(13):4877. doi: 10.3390/ijerph17134877

21. Kanamori H. Rethinking environmental contamination and fomite transmission of SARS-CoV-2 in the healthcare. J Infect. Published online August 27, 2020. doi: 10.1016/j.jinf.2020.08.041

22. List N: Disinfectants for use against SARS-CoV-2 (COVID-19). United States Environmental Protection Agency. https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2. Accessed September 13, 2020.

23. Aircraft cleaning and disinfection during and post-pandemic edition 1 – 19 June 2020. International Air Transport Association. https://www.iata.org/contentassets/5d42ffd2b6ee43a8963ee7876584de5a/aircraft-cleaning-guidance-covid.pdf. Accessed September 13, 2020.

24. Preventing spread of coronavirus disease 2019(COVID-19) guideline for airports, fourth edition. International Civil Aviation Organization. https://www.icao.int/Security/COVID-19/StateActions/Preventing%20Spread%20of%20Coronavirus%20Disease%202019%20(COVID-19)%20Guideline%20for%20Airports%204th.pdf#search=disinfection. Accessed September 13, 2020.

25. Ikonen N, Savolainen-Kopra C, Enstone JE, et al. Deposition of respiratory virus pathogens on frequently touched surfaces at airports. BMC Infect Dis. 2018;18(1):437-7. doi: 10.1186/s12879-018-3150-5

26. Weiss H, Hertzberg VS, Dupont C, et al. The airplane cabin microbiome. Microb Ecol. 2018;77(1):87-95. doi: 10.1007/s00248-018-1191-3

27. Cobrado L, Silva-Dias A, Azevedo MM, Rodrigues AG. High-touch surfaces: Microbial neighbors at hand. Eur J Clin Microbiol Infect Dis. 2017;36:2053-2062. doi: 10.1007/s10096-017-3042-4

28. Guidance for flight operations during and post pandemic edition 3 – 28 Aug 2020. International Air Transport Association. https://www.iata.org/contentassets/d0e499e4b2824d4d867a8e07800b14bd/iata-guidance-flight-operations-during-post-pandemic.pdf. Accessed September 13, 2020.

29. ICAO.int. 2020. Aircraft Module - Disinfection – Passenger Cabin. [online] Available at: <https://www.icao.int/covid/cart/Pages/Aircraft-Module---Disinfection-%E2%80%93-Passenger-Cabin.aspx> [Accessed 28 September 2020].

30. EASA. 2020. Guidance On Aircraft Cleaning And Disinfection | EASA. [online] Available at: <https://www.easa.europa.eu/document-library/general-publications/guidance-aircraft-cleaning-and-disinfection> [Accessed 28 September 2020].

31. US EPA. 2020. Section 18 Emergency Exemption Requests And Coronavirus (COVID-19) | US EPA. [online] Available at: <https://www.epa.gov/pesticide-registration/section-18-emergency-exemption-requests-and-coronavirus-covid-19> [Accessed 28 September 2020].

32. Sagripanti J-L, Lytle CD. Estimated inactivation of coronaviruses by solar radiation with special reference to COVID-19. Photochem Photobiol. 2020;96:731-737. doi: 10.111/php.13293

33. Owen L, Laird K. The role of textiles as fomites in the healthcare environment: A review of the infection control risk. PeerJ. 2020;8:E9790. doi: 10.7717/peerj.9790

34. Chin AWH, Chu JTS, Perera MRA et al. Stability of SARS-CoV-2 in different environmental conditions. Lancet Microbe. 2020;1(1):E10. doi: 10.1016/S2666-5247(20)30003-3

35. van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and surface stability of SARS-CoV-2 as compared with SARS- CoV-1. NEJM. 2020;382(16):1564-1567.

36. Zhou W, ed. The Coronavirus Prevention Handbook: 101 Science-Based Tips That Could Save Your Life. New York, NY: Skyhorse Publishing; 2020.

37. Goldman E. Exaggerated risk of transmission of COVID-19 by fomites. Lancet Infect Dis. 2020;20(8):892-893. doi: 10.1016/S1473-3099(20)30561-2

38. Cimolai N. Environmental and decontamination issues for human coronaviruses and their potential surrogates. J Med Virol. Published online June 12, 2020. doi:10.1002/jmv.26170.

39. Inagaki H, Saito A ,Sugiyama H, Okabayashi T, Fujimoto S. Rapid inactivation of SARS-CoV-2 with deep-UV LED irradiation. Emerg Microbes Infect. 2020;9(1):1744-1747. doi: 10.1080/22221751.2020.1796529

40. Rutala WA, Weber DJ. Monitoring and improving the effectiveness of surface cleaning and disinfection. Am J Infect Control. 2016;44:e69-e76. doi: 10.1016/j.ajic.2015.10.039

41. Cleaning and disinfection of environmental surfaces in the context of COVID-19: Interim guidance. World Health Organization. https://www.who.int/publications/i/item/cleaning-and-disinfection-of-environmental-surfaces-inthe-context-of-covid-19. Accessed September 13, 2020.

42. Beyth, N., Houri-Haddad, Y., Domb, A., Khan, W., & Hazan, R. (2015). Alternative antimicrobial approach: nano-antimicrobial materials. Evid Based Complement Alternat Med, 2015, 246012. doi:10.1155/2015/246012

43. Gefen A, Ousey K. (2020). Update to device-related pressure ulcers: SECURE prevention. COVID-19, face masks and skin damage. J Wound Care. 2020;29(5):245-259. doi: 10.12968/jowc.2020.29.5.245

44. Volgenant CMC, Persoon IF, De Ruijter RAG, De Soet, JJH. Infection control in dental health care during and after the SARS-CoV-2 outbreak. Oral Dis. Published online May 11, 2020. doi: 10.1111/odi.13408

45. Li T, Liu Y, Li M, Qian X, Dai SY. Mask or no mask for COVID-19: A public health and market study. PloS One. 2020;15(8), E0237691. doi: 10.1371/journal.pone.0237691.

46. Pradhan D, Biswasroy P, Naik PK, Ghosh G, Rath G. A review of current interventions for COVID-19 Prevention. Arch Med Res. 2020;51:363-374. doi: 10.1016/j.arcmed.2020.04.020

47. Coronavirus disease 2019 (COVID-19): How to protect yourself and others. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html. Accessed September 15, 2020.

48. When and how to wash your hands. Centers for Disease Control and Prevention. https://www.cdc.gov/handwashing/when-how-handwashing.html. Accessed September 15, 2020.

49. Berardi A, Perinelli, DR, Merchant HA, et al. Hand sanitisers amid CoViD-19: A critical review of alcohol-based products on the market and formulation approaches to respond to increasing demand. Int J Pharm. 2020;584:119431. doi: 10.1016/j.ijpharm.2020.119431

50. Perez-Alba E, Nuzzolo-Shihadeh L, Fonseca-Ruiz A, et al. (2020). Frequency of facial touching in patients with suspected COVID-19 during their time in the waiting room. Infect Control Hosp Epidemiol. 2020;1-2. doi: 10.1017/ice.2020.389

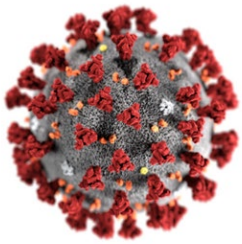
OAS-28
(5/15)

Department of the Interior
Information Bulletin

Subject: Aircraft Cleaning - COVID-19 Prevention

Area of Concern: Personnel Safety

Distribution: All Aviation Operations



Discussion: On March 11, 2020, the World Health Organization (WHO) declared the outbreak of COVID-19 a pandemic.

As we move towards the season associated with a significant increase in operations, the following cleaning procedures recommended by the Center for Disease Control and Prevention (CDC) should be followed in order to prevent the spread of COVID-19.

Before starting, always check with the aircraft manufacturer to ensure cleaning products used are compatible with aircraft surfaces and electronics.

When cleaning aircraft, it's critical to clean all touch surfaces thoroughly, which there are many within the tight confines of an aircraft. Pay special attention to every handle, knob, touch screen, yoke, belt buckle, and control that is touched in routine use both inside and outside the aircraft. And don't forget headsets and helmets. As a precaution, those should be thoroughly cleaned after use and never shared without thorough disinfection in accordance with manufacturer's guidelines. Current CDC guidance is that the virus that causes COVID-19 can survive for three to seven days on some surfaces. As a result, you should strongly consider keeping your helmet or headset with you and storing shared headsets in separate cases with the date of last use or date cleaned if they are to be used by others.

Hard (non-porous) surfaces. Wear disposable nitrile gloves when cleaning and disinfecting surfaces. If surfaces are dirty, they should be cleaned using a detergent or soap and water prior to disinfection. Gloves should be properly discarded after each cleaning. If reusable gloves are used, those gloves should be dedicated for cleaning and disinfection of surfaces for COVID-19 and should not be used for other purposes.

For a list of products that are EPA-approved for use against the virus that causes COVID-19 visit the EPA website List N: Disinfectants for use against SARS-CoV-2. It's important to follow manufacturer's instructions for all cleaning and disinfection products for concentration, application method and contact time, etc.

Additionally, diluted household bleach solutions (at least 1000 ppm sodium hypochlorite) can be used if approved by the aircraft manufacturer and appropriate for the surface. Again, follow the manufacturer's instructions for application, ensuring a contact time of at least 1 minute, and allowing proper ventilation during and after application. Check to ensure the product is not past its expiration date. **Never mix household bleach**

with ammonia or any other cleanser. Unexpired household bleach will be effective against coronaviruses when properly diluted. You can prepare a bleach solution by mixing 5 tablespoons (1/3rd cup) bleach per gallon of water or 4 teaspoons bleach per quart of water.

Soft (porous) surfaces. For soft or porous surfaces, such as fabric seats, remove any visible contamination, if present, and clean with appropriate cleaners indicated for use on these surfaces. After cleaning, use products that are EPA-approved for use against the virus that causes COVID-19 and that are suitable for porous surfaces.

For frequently touched electronic surfaces, such as tablets or touch screens, remove visible dirt, then disinfect following the manufacturer's instructions for all cleaning and disinfection products. If no manufacturer guidance is available, consider the use of alcohol-based wipes or sprays containing at least 70% alcohol to disinfect. **Many electronic components are sensitive to harsh cleaning products and moisture. Allowing moisture to penetrate certain areas beyond the surface could result in damage and render the aircraft inoperable.**

Contracted aircraft. Contractors should have an Emergency Response Plan that addresses the procedures and frequency for disinfecting the aircraft and protecting personnel against exposure as well as what to do in the event of an exposure or suspected or confirmed case of COVID-19. Most DOI aircraft contracts state:

> Section B5.2, "**The aircraft interior must be clean** and neat with no unrepaired tears, rips, or other damage. **The exterior finish**, including the paint, **must be clean**, neat, and in good condition."
>
> Section C9, "The Contractor shall keep and maintain programs necessary to assure safety of ground and flight operations. The development and maintenance of these programs are a material part of the performance of the contract. Examples of such programs are (1) personnel activities, (2) maintenance, (3) safety, and (4) compliance with regulations."

An entry in a cleaning logbook should be made after the completion of the cleaning procedures to document actions taken and prevent the aircraft from being grounded in the event of a suspected or confirmed case of COVID-19. Sealing the aircraft entry areas (doors) with tape or other evidence marking materals to ensure the aircraft remains in a clean state when not used is also recommended.

Ensure that proper PPE is worn during the cleaning process. Gloves and any other disposable PPE used should be removed and properly disposed of after cleaning. Wash hands immediately after removal of gloves and PPE with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer with at least 60% alcohol if soap and water are not available. Using disposable gowns is best practice but often not practicable in most of our operations. As such, one should strongly consider washing work uniforms/clothes worn during cleaning using the warmest appropriate water setting and drying them completely.

Safety of flight is paramount. If any of the procedures noted above conflict with safety of flight, they should be discontinued and reported to management so that alternative solutions can be explored. A SAFECOM should also be submitted to report the issue(s).

Taking shortcuts only prolongs the pandemic. Together, we can manage this challenge.

/s/ Keith Raley

Keith Raley
Chief, Aviation Safety, Training, Program
Evaluations and Quality Management
DOI, Office of Aviation Services

Aircraft Disinfection and Cleaning Procedures Guide Now Available

March 18, 2020

A new Aircraft Disinfection and Cleaning Procedures guide is available to NBAA members in response to the global COVID-19 pandemic.

"It's important for business aviation to put aircraft disinfection and cleaning at the forefront, given the current global situation with COVID-19," said Tyler Harper, of AEM Logistics and the principal author of the guide. "A cough can produce up to 3,000 droplets and spread 15 feet from the person without covering their mouth. This has the potential of contaminating most interior surfaces, considering the size of business aircraft.

"Following each flight, and even during flight, it's best practice to ensure the aircraft is fully disinfected and maintained," added Harper, explaining the Centers for Disease Control and Prevention (CDC) believes the virus can live on hard surfaces for up to nine days. "That's why it's so important that business aircraft are disinfected properly with correct products and processes, whether being cleaned by an owner/operator, crewmember or contracted cleaning service. As always, it is recommended that these services are executed by qualified and trained personnel."

The guide includes a summary of CDC aircraft cleaning recommendations for symptomatic passengers and non-symptomatic passengers. It also lists PPE recommended during enhanced cleaning, including gloves, gowns and safety goggles as well as general recommendation during enhanced cleaning processes. View the guide. (https://nbaa.org/aircraft-operations/safety/coronavirus/aircraft-disinfection-coronavirus/)

NBAA members and professional aircraft detailers also shared recommended PPE, cleaning products and interior disinfection procedures. For flight deck and cockpit cleaning, the experts suggest using approved procedures and products in accordance with OEM guidance due to the delicate nature of instruments.

Several OEMs have published services news, special notices and advisories regarding COVID-19, including cleaning and other procedures. Many also describe safety precautions to be taken for and by visitors to OEM facilities. Gulfstream, for example, will query visitors and flight crews regarding recent travel and potential exposure to anyone diagnosed with COVID-19, as well as the aircraft's recent travel to high-risk areas. Be sure to check each OEM's website for updates and resources.

"Business aviation can serve a critical role in containment and treatment of COVID-19 but we can only serve our organizations and our communities if we act responsibly, putting safety first and taking cleaning and disinfecting seriously," said Brian Koester, CAM, NBAA's director of flight operations and regulations. "Consult the new Aircraft Disinfection and Cleaning guide, as well as OEM-specific cleaning recommendations, to ensure your aircraft is safe for all passengers and crewmembers."

NBAA members can learn more about purchasing cleaning and disinfecting supplies by contacting AEM Logistics at aem.group (https://aem.group/).

Visit NBAA's COVID-19 resource page. (https://nbaa.org/aircraft-operations/safety/coronavirus/)

Sponsor of NO PLANE NO GAIN (https://noplanenogain.org/)

Member of IBAC International Business Aviation Council Ltd. (http://www.ibac.org/)

Aircraft Cleaning Services

Aircraft Cleaning Service

Aircraft COVID-19 Disinfectant Service

Aircraft Disinfection Procedures

Interior Cabin Cleaning Service

Exterior Surface Cleaning Service

Cockpit Cleaning Service

Aircraft Disinfection

Cleaning Schedule and Checklist

Training and Education

Cleaning Standards

Cleaning Products

About Us

Contact

International

Jobs

Aircraft Interior Cabin Cleaning

Aircraft interior cleaning also is known as aircraft detailing service is the act of performing a thorough cleaning, restoration, and finishing. Interior detailing involves a deep cleaning of the whole interior cabin including galley, toilet compartments, passenger cabins, and flight deck. The purpose of inside cabin cleaning is to avoid health risks, restore the interior beauty, remove the offensive ordor, and to avoid the spread of dirt and contaminations within the aircraft.

Our aircraft interior cleaning is a full package of service that includes labor, materials, and equipment. The company uses high-quality specialized equipment and cleaning solutions to meet the airlines and aviation industry cleaning regulatory standards.

Interior Cleaning

Interior Cleaning includes the vacuuming of carpets and seats, spot cleaning of stains in carpeting, seats and headliner; also cleaning the cockpit displays and gauges, interior windows, wall panels, countertops, lavatory seat and deck, entranceway steps and handrails and emptying the trash. The lavatory and galley cabinets and drawers require cleaning as well.

Aircraft Windows

The aircraft windows are normally made of glass or plastic and can be easily damaged during the cleaning process. It is therefore highly recommended that brushes and abrasive clothes shall not be used for such type of cleaning. The correct way of aircraft window cleaning is to use clean, soft, lint-free cloths that are specially designed and approved for aircraft or sensitive environment glass or transparent plastic cleaning. Along with the approved and recommend cleaning products, the aircraft window cleaning is carried out using the aircraft manufacturer's procedures outlined especially for window cleaning.

Aircraft Cockpit

Aircraft cockpit cleaning involves vacuuming, dusting and cleaning the aircraft instruments and display screens. All components of the aircraft cockpit are cleaned with attention to details but with care to avoid damaging the expensive components. Only clean, soft, lint-free cloths and dust brushes are used on aircraft instruments and displays. Only approved anti-static fluids are sprayed onto instruments and displays.

Aircraft headliner

The aircraft headliners require spot cleaning. Areas are tested prior to cleaning to ensure the cleaning agent do not stain the headliner. Some headliners require dry cleaning agents only and will stain if a water-based product is used. We determine the special cleaning requirements for the headliner before the headliner is cleaned.

Interior Paneling and Siding

The interior panelling and siding varies with each aircraft but requires regular cleaning. Before cleaning areas are tested to determine if the panelling will stain. Silks/ delicates, fire blocked fabrics, and upholstery is cleaned using mild and recommended cleaning solutions.

Aircraft Carpets

Routine cleaning of the carpets is accomplished with a vacuum followed with spot cleaning. Semi-annually, the carpets are cleaned using a hot water extraction machine and a mild detergent pre-spray. The pre-spray shall is rinsed with a mild acid rinse approved for carpet cleaning. All soap residues are rinsed out with care not to wet the carpet backing. After cleaning, carpet blowers is installed to speed up the drying time. It is critical that the carpet backing does not get wet. If the carpet backing gets wet, corrosion may result on the aircraft floorboards. The aircraft carpet deep cleaning attempt to remove carpet stains such as coffee, grease and oils, and common food or drink spots.

London Based Company

Aircraft Cleaning is based in London city, the company has professional mobile cleaning outlets nationwide in the UK. Our expert aircraft cleaning technicians are well equipped and capable to provide you onsite cleaning service at competitive prices. Because of our low prices and great customers' experiences have set us apart from other cleaning companies in London.

Aircraft Cleaning

"Cost-Effective Professional Aircraft Cleaning Services in London & Nationwide in the UK" Aircraft cleaning is a professional cleaning service carried out by specialists to help guard against the most common…

Read More

Aircraft Interior Cabin Cleaning

Aircraft interior cleaning also is known as aircraft detailing service is the act of performing a thorough cleaning, restoration, and finishing. Interior detailing involves a deep cleaning of the whole…

Read More

Aircraft Exterior Surface Cleaning

Aircraft exterior cleaning also is known as aircraft exterior detailing service involves restoring the original condition of the surface of the aircraft. The exterior cleaning can be carried out using…

Read More

Aircraft Cockpit (Flight Deck) Cleaning

The aircraft cockpit cleaning also is known as the flight deck cleaning service that involves the cleaning of flight instruments panel, controls, navigation display systems, and the surroundings of the…

Read More

Aircraft Cleaning Standards

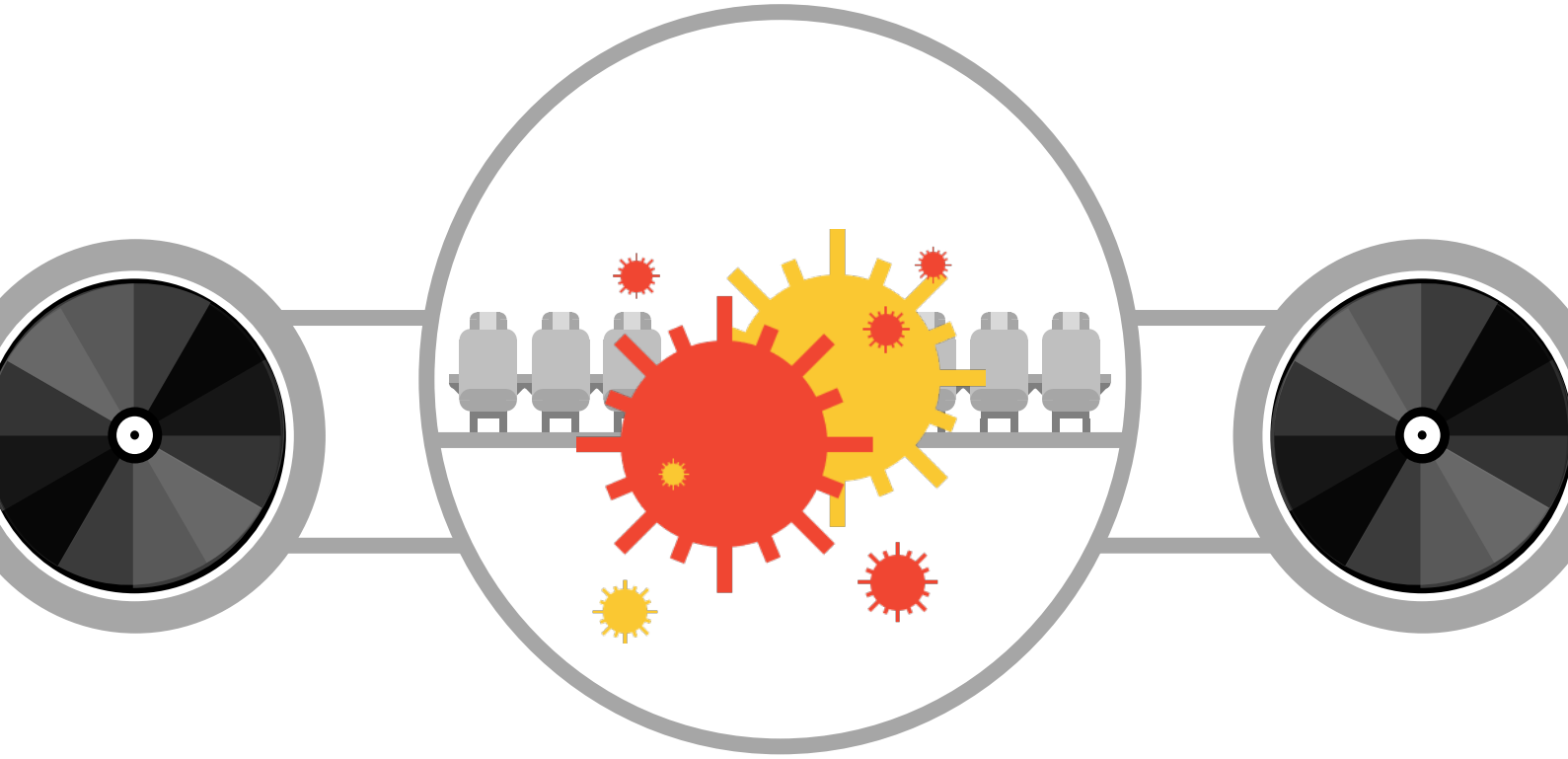
Aircraft cleaning standards are regulatory requirements that civil aviation authorities (worldwide) impose on the airline operators to ensure the minimum level of cleanliness onboard. The purpose of cleaning standards in…

Read More

Aircraft Cleaning Cabin Cleaning Disinfection Procedures Cockpit Cleaning Cleaning Standards COVID-19 Disinfection Cleaning Products
Schedule Checklist Aircraft Disinfection Cleaning Standards Cockpit Cleaning Exterior Cleaning Cabin Cleaning Training & Certification
International Career & Jobs About Us Contact Us

Aircraft cleaning and disinfection during and post pandemic

Ed. 2 – 22 January 2021



Disclaimer

The information contained in this publication is subject to constant review in the light of changing government requirements and regulations. No subscriber or other reader should act based on any such information without referring to applicable laws and regulations and without taking appropriate professional advice.

Although every effort has been made to ensure accuracy, the International Air Transport Association shall not be held responsible for any loss or damage caused by errors, omissions, misprints, or misinterpretation of the contents hereof. Furthermore, the International Air Transport Association expressly disclaims any and all liability to any person or entity, whether a purchaser of this publication or not, in respect of anything done or omitted, and the consequences of anything done or omitted, by any such person or entity in reliance on the contents of this publication

Table of Contents

Revision record

Symbol	Meaning
□	Insertion
△	Amendment
⊗	Deletion

Revision table

Revision	Date	Section	Significant changes
Draft	29 May 2020	N/A	
Edition 1	19 Jun 2020	N/A	
Edition 2	22 Jan 2021	Entire document	Overall revision to align with AHM1100/1111, IGOM Ed.10, ICAO Cart Take Off, RTCA/EUROCAE and other relevant industry guidance
		1	No revision
		2	Minor editorial revision
		3	Enhancement of terminology
		4	Revised, to include crosslink to section with resource links
		5	Revised numbering and minor revision in section 5.1, 5.2.4 and 5.2.5 5.3 is entirely new section
		6	Entire revision
		7	Alignment with IGOM 10th Edition 3.7 and editorial revisions 7.4 is entirely new section
		8	Alignment with IGOM 10th Edition 3.7
		9	No revision
		10	Minor revision of cross-links in footnotes
		11	Minor editorial revision

1 Introduction

The COVID-19 pandemic has significantly disrupted the airline business and resulted in crisis of the entire aviation industry. Governments together with all aviation stakeholders are joining forces to come up with a common plan for a progressive restart of the operations.

According to IATA Medical Advisory Group, the cleaning and disinfection procedures, in excess of the previous norms, are likely to form part of the range of measures required in a restart process. It is likely that improved routine cleaning could provide reassurance to passengers and increase their confidence in the reduced risk of the transmission of communicable diseases in aviation processes.

△ 2 Purpose

The purpose of this guidance is to provide airlines and ground handling providers with standardized procedures for cleaning and disinfecting of the cabin, flight deck and cargo compartments while taking in consideration the operational impact, cost and the practicality of mitigation measures for pandemic management.

This guidance document has been developed in cooperation with various IATA expert groups, aircraft manufactures and industry stakeholders. It has been based on the various international regulations and guidance's as well as based on aircraft's OEMs and industry recommended practices applicable to aviation and public health, as listed in Section 4 - Regulatory and industry references.

In principal, the standard cleaning procedures remain unchanged, however additional disinfection measures need to be added in the context of pandemic management. The standardization of aircraft cleaning and disinfection processes is essential to successfully restart operations and reinstall passenger confidence.

It is important that the ground handling community endeavors to remain fully updated on all guidance material as well as remain flexible to adapt the measures according to risk-based and data-driven decisions.

All IATA ground handling guidance are posted on IATA's Ground Operations page .

△ 3 Definitions and terminology

Cleaning: Removal of visible dirt or particles through mechanical action undertaken on a routine and frequent basis. **Cleaning intervals:**

(a) **Turnaround cleaning**: Performed on aircraft while on ground prior to departure within a defined ground time.
(b) **Transit cleaning**: Type of turnaround clean that may be performed with transit passengers onboard
(c) **Layover/Night-stop cleaning**: Performed when the aircraft is on a longer predefined time. The clean doesn't involve removal of cabin panels and/or gallery inserts.
(d) **Inflight cleaning**: Performed by cabin crew while the aircraft is airborne.
(e) **Deep cleaning**: Performed when the aircraft is on a longer predefined time. The cleaning may include the removal of cabin panels and/or galley inserts under the supervision of maintenance; This type of cleaning is NOT addressed in the scope of this document.

Disinfection: The procedure whereby measures are taken to control or kill infectious agents on a human or animal body, on a surface or in or on baggage, cargo, containers, conveyances and goods by direct exposure to chemical or physical agents. This definition is based on WHO Guide to Hygiene and Sanitation in Aviation and ICAO Annex 9 .

Note: Process of cleaning and disinfection in some industry guidance is also referred to as "Sanitation/Sanitization", which means clean of germs or pathogens.

Cleaning and disinfectant products: A commercially produced chemical substances (which is typically used in the form of liquid solution or spray) that destroys pathogens.

Event: An occurrence of suspected or confirmed COVID-19 case or other communicable disease onboard of aircraft; aircraft contaminated with body fluids, or other non-standard (uncommon) situation requesting additional cleaning and disinfection.

△ 4 Regulatory and industry references

The following regulatory references, industry references, and OEM's guidance were consulted, and its content used for the development of this guidance. Further requirements may be applicable as per your local regulation.

WHO

- International Health Regulation
- Guide to Hygiene and Sanitation in Aviation
- Operational considerations for managing COVID-19 cases or outbreak in aviation
- Q&A on Coronavirus disease (COVID-19)
- Coronavirus physical distancing

ICAO

- Annex 9 - Facilities required for implementation of public health measures
- Annex 14 - The aerodrome emergency plan
- Facilitation Manual and Model National Air Transport Facilitation Programme
- CART Take off Guidance

IATA

- Restarting aviation following COVID-19 Medical evidence for various strategies
- Guidance for Ground handling return to service
- Guidance for Cabin Operations During and Post Pandemic
- Suspected Communicable Disease Guidelines for cleaning crew
- Guidance for Flight Operations During and Post Pandemic
- Airport Handling Manual, Ch.1110 and 1111 Ground Operations Training Program, Training syllabi Aircraft Cleaning and Disinfection
- IATA Ground Operations Manual, Ch.3.7 Aircraft Cleaning and Disinfection

EASA

- Annex 1 – List of airports located in affected areas with high risk of transmission of the COVID-19 infection
- Guidance on Aircraft Cleaning and Disinfection in relation to the SARS-CoV-2 pandemics
- EASA SD No.: 2020-04 -Operational measures to prevent the spread of Coronavirus `SARS-CoV-2` infection
- EASA SIB No.: 2020-02R5 Coronavirus 'SARS-CoV-2' Infections – Operational Recommendations

FAA

- Updated Interim Occupational Health and Safety Guidance for Air Carriers and Crews
- Aircraft Interior Disinfection, Special Airworthiness Bulletin, SAIB: NM-20-17

US Center for Disease Control (CDC)

- Updated Interim Guidance for Airlines and Airline Crew: Coronavirus Disease 2019 (COVID-19)

US States Environmental Protection Agency

- List N: Disinfectants for Coronavirus (COVID-19)

CAAC

- Preventing Spread of Coronavirus Disease 2019 (COVID-19) Guideline for Airlines

RTCA/EUROCEA

- RTCA-DO388/ EUROCAE-ED-287 Guidance Document on Aircraft Cleaning and Disinfection

SAE

- AMS1451C, Disinfectant, Aircraft
- AMS1452C, Disinfectant, Aircraft, General Purpose (concentrated liquid).
- AMS1453A Disinfectant Cleaner for Aircraft Interior General Purpose Liquid (diluted).
- AMS1550B Cleaner for Interior Materials of Aircraft Biodegradable, Water-Base
- AMS1525D Cleaner for Aircraft Exterior Metallic Surfaces, Wipe Solvent, Cold Operations.
- AMS1526C Cleaner for Aircraft Exterior Surfaces, Water-Miscible, Pressure

Aircraft manufacturers (OEM)

- Airbus – Operators Information Transmission – SUBJECT: ATA 21 – Virus Outbreaks – Novel Corona Virus
- ATR – Operators Information Message OIM 2020-002 (COVID-19) CABIN AIR SUPPLY
- ATR – Operators Information Message OIM 2020-007 (COVID-19) AIRCRAFT CLEANING AND DISINFECTION
- Boeing – MOM-MOM-20-0053-01B

Refer to the OEM's for most current information as documents below might have been updated or superseded.

△ 5 Cleaning & disinfection programs during pandemic

△ 5.1 Programs update

During the pandemic, companies shall review and amend their cleaning and disinfection programs based on the local regulatory requirements, airport plan for enhanced cleaning and disinfection and company risk assessment. It shall be kept updated in accordance with the WHO Guide to Hygiene and Sanitation in Aviation and industry standards and recommendations.

It is important to emphasize that any measures taken due to COVID-19 and other communicable diseases shall be progressive and should be adjusted to the existing situation– enhanced at the initial stage of in case of higher risk level and reduced or removed as regional conditions improve.

△ 5.1.1 Operational risk assessment

It is essential that airlines, in cooperation with their cleaning companies, evaluate and assess the following aspects as well as its impact on the operations:

(a) Pandemic Management
   1. Flight schedules, aircraft type and size, and ground (stopover) times
   2. The risk levels for passenger, personnel on each route based on exposure to COVID-19 or other communicable disease
   3. Pandemic situation at destination from where passengers are connecting
   4. Readiness and availability of cleaning companies at airports
   5. Availability of personal protective equipment (PPE)
   6. Required safety and health measures such as physical distancing, hygiene, use of PPEs, etc.

(b) Personnel Readiness
   1. Availability and allocation of cleaning personnel to perform the job tasks
   2. Existing competency and skill gaps
   3. Training currency, training needs and requirements
   4. Occupational safety regulatory compliance, continuity

(c) Operational readiness
   1. Cleaning and disinfections types, methods and application frequency
   2. Enhancement of standard cleaning and disinfection procedures due to technical needs, events causing health risks
   3. Type and availability of cleaning and disinfection products that are not detrimental to aircraft materials
   4. Updated procedures for removal and safe disposal of any contaminated water, food, human or animal waste, wastewater and any other contaminated matter from a conveyance
   5. Regulatory and airport requirements

For further guidance on pandemic management, airport, personnel and operational readiness, please refer to IATA Guidance for ground handling return to service.

5.1.2 Risk assessment of routes

Airlines are required to monitor and assess the risk level of transition of the COVID-19 at each route. The risk levels will change frequently according to the rate of local transmission, booked passenger load, the length of the flight(s) operated and other factors.

It is recommended that airlines develop their own methodology for conducting a risk assessment of exposure to COVID-19 for each route to determine whether additional mitigations are required in relation to services, policies or procedures.

Some health agencies have published dashboard information relating to infection rates, which assist in assessing risk. Please refer to WHO, European Center for Disease Prevention and Control , EASA Annex 1 – List of airports located in affected areas with high risk of transmission of the COVID-19 infection and US Center for Disease Control.

Further guidance on risk assessment and mitigation actions based on the risk level can be found in the CAAC Preventing Spread of Coronavirus Disease 2019 (COVID-19) Guideline for Airlines, Guidance for ground handling return to service and IATA Guidance for Cabin Operations During and Post Pandemic.

5.2 Cleaning personnel

5.2.1 Occupational health and safety

Organizations shall ensure the development and implementation of occupational health and safety (OHS) pandemic strategies to ensure that personnel are protected. Strategies must comply with all applicable legislations, local requirements and guidelines pertaining to COVID-19 or other communicable disease.

Such strategies include enhanced hygiene routines, ensuring the availability of relevant facilities and disinfectants, health and wellness checks, proper use of personnel protection equipment, awareness campaigns and training, etc. For details on such OHS strategies, please refer IATA Guidance for ground handling return to service.

5.2.2 Personnel protection

Based on the pandemic demands, each company shall develop a multi-layered approach strategy which may include:

(a) Hygiene routines
   1. Availability of hand washing facilities
   2. Frequent handwashing and/or use of alcohol-based sanitizers
   3. Personal hygiene to include minimal face-touching, encourage covering of mouth to avoid droplet spreading via coughing
   4. Understanding and recognition of COVID-19 symptoms or other communicable disease
   5. Encourage testing and vaccinations when needed and where available
   6.

(b) Physical distancing
   1. Distances to be observed between personnel while on duty and/or during breaks
   2. Separation of teams during a shift and movement to/from the aircraft and other workplace
   3. Scheduling of the same teams to work the same days, creation of "bubble" teams.
   4. Conduct contactless handovers, i.e. via telephone, videoconference, electronic logs, or at a minimum through physical distancing
   5. Reduction of unnecessary personnel movement around the airport

(c) Personal protection equipment (PPE) e.g. procedural masks, face covers, shields, goggles, gloves, gowns, aprons, etc.
   1. Each company shall define the type of PPE their cleaning personnel shall use depending on local rules and regulation and on the risk of exposure (e.g. type of activity) and the transmission dynamics (e.g. droplet spread)
      i. If splashing is possible, eye protection may be required according to the manufacturer's label
      ii. Disposable gloves are recommended by the manufacturer of the disinfectant
      iii. Disposable gowns should be worn while cleaning the cabin and lavatories

(d) Health monitoring, screening and testing such as temperature measuring of personnel, symptom recognition, health declaration etc.

Please refer to Attachment 1: Poster in staff area.

The levels of adequate protection for cleaning personnel should be evaluated on a case by case basis. In the initial stages, the combination of the above approaches might be required to mitigate the risks.

Please refer to IATA Restarting aviation following COVID-19 Medical evidence for various strategies and Guidance for Ground handling return to service for further details.

5.2.3 Personnel competency

To ensure that all cleaning personnel are qualified and competent before they start to perform their tasks, companies shall ensure that:

(a) No person is assigned to perform a task for which he/she does not hold a record of training
(b) Initial training is provided to all new personnel before they are scheduled for work
(c) The recurrent training is provided according to the training plans
(d) Where recurrent training may not be achieved due to the pandemic ensure validity has been extended in accordance with the regulatory requirements; refer to AHM1111
(e) Start-up programs are provided to all personnel returning from various types of leave
(f) Online training and virtual classrooms are used as much as possible for theoretical training
(g) Practical training and competency checks are provided for topics which cannot not be conducted via computer
(h) All training material is updated to address changes in health and safety measures and cleaning processes
(i) Awareness campaigns, posters, signs, videos, on job training. are in place
(j) Extended supervision is performed especially in the initial stage

△ 5.2.4 Training

Only trained and qualified personnel shall carry out aircraft cleaning tasks. In addition to the current training, all cleaning personnel shall be training for COVID-19 or other communicable disease measures and changes in the cleaning process derived from those measures. The training shall be always aligned with the national health authority guidance. For current, competent cleaning staff, any updates will need to be communicated either by briefing, notice or other effective method. The training shall include, but is not limited to, the following topics:

(a) Covid-19 or other communicable disease awareness
(b) Personnel protection
    1. Changes in PPEs required for new products used
    2. Use of PPEs relevant to COVID-19 or other communicable disease
    3. Performing job while using PPEs and physical distancing
    4. Cross contamination
(c) Changes in type and use of cleaning and disinfection products
    1. Chemical composition and effects of product used on aircraft
    2. Efficacy and application methods, techniques including dwell time
    3. Understanding of the Safety Data Sheets (SDS) for the products used
    4. Hazards of the chemicals used in cleaning and disinfection on personnel health and aircraft interior and equipment
    5. PPEs required for products used
(d) New or amended standards and procedures
    1. Changes in cleaning and disinfection tasks and techniques
    2. Routines and frequency
    3. Use of ventilation and air-conditioning according to OMEs and local regulations Airline specific requirements
    4. Non-routine procedures, post-event cleaning and disinfection

△ 5.2.5 Pandemic awareness

As the pandemic situation is very dynamic, regulatory and health authorities' requirements are changing almost daily, it is essential to provide regular briefs and updates to all personnel on the following topics:

(a) Changes introduced by new regulations on COVID-19 or other communicable diseases
(b) Organizational and management changes / updates
(c) New or amended procedures during the COVID-19 or other communicable diseases
(d) Health and safety actions
(e) Hygiene routine reminders

Cooperation with airport operators is recommended to ensure that airport requirements and instructions are incorporated into the training and updates.

Refer to IATA Guidance for ground handling during COVID-19 for detailed guidance related to personnel competency and training and to ICAO CART Take Off Guidance.

□ 5.3 Management oversight

An oversight program should be established to ensure the effectiveness of cleaning and disinfection. An oversight program needs to include not only a "visual" review of clean the program needs to have a process control review to ensure disinfectants are removing microbial agents. These process controls need to include the following:

(a) Cleaning and disinfection methods, techniques and frequencies
(b) Cleaning and disinfection products, use and effects
(c) Personnel competency and training
(d) Performance measures need to include process effectiveness.
(e) Tracking and tracing positive or suspicious cases

A periodic review is done to ensure process controls and measures have been established and are being used.

△ 6 Cleaning and disinfection

□ 6.1 Cleaning

Cleaning is an important first step in the disinfection process. Cleaning procedures remain generally unchanged, nevertheless the frequency and areas of cleaning might need to be adjusted. While cleaning is usually a separate process from the disinfection (as the dirt/soil needs to be removed before disinfection), cleaning done with disinfection products also results in disinfection and can therefore be combined into one process.

□ 6.2 Disinfection

Disinfection is performed on previously cleaned surface. Each airlines should implement procedures and processes for disinfection of aircraft based on the company risk assessment, taking in consideration risk levels of routes, destinations, transit stops, aircraft types configurations, methods and products used, duration of the disinfecting effects of the method, cleaning intervals and other factors.

□ 6.2.1 Disinfection procedures

(a) Routine disinfection is considered as a standard process routinely performed in addition to the cleaning process.
(b) Event based disinfection (also known as post-event) is performed during or after a specific event (e.g. after the transport of suspected or confirmed cases of communicable diseases onboard, spill of body fluids in the aircraft). This disinfection is not a standard practice and the requirements, methods, procedures as well as training for personnel will most likely differ. The regulatory recommendation and requirements are described in the World Health Organization (WHO) Guide to Hygiene and Sanitation in Aviation, and ICAO Annex 9.

□ 6.2.2 Disinfection methods

It is necessary for a airline to exercise caution in selecting disinfecting methods to ensure that it is suitable for aircraft use and that it does not have any negative effects on human health and on aircraft interiors and components.

There are currently two disinfection methods:

(a) Chemical disinfection is primarily the most common method used, where elimination of pathogens is done via use of chemicals disinfectants; Techniques of application may include :
    1. Wiping procedures – wipe on/wipe out
    2. Electrostatic Spraying
    3. Fogging
(b) Non-chemical disinfection is also being used or developed to eliminate or neutralize targeted pathogens via different techniques of application such as:
    1. Aircraft Environmental Control System (ECS) - HEPA Filters
    2. Ultraviolet light
    3. Ionization
    4. Thermal treatments
    5. Other technologies as they may be identified

Note: Non-chemical method is not in the scope of this document. Most non-chemicals techniques are presently in the testing and approval process by airlines and OEMs for the application in the aircraft. If airlines decide to implement any of the non-chemical techniques, the following processes should be completed:

- *The airline has done a thorough evaluation of the proposed techniques to ensure it is safe for the aircraft and that it complies to health regulations.*
- *The aircraft manufacturer (OEM) and/or regulator has approved the technique.*

- *If applicable, the technique has been certified by the appropriate governing body (Civil Aviation Authority; CAA and the appropriate Health Authority that has the oversight) for use in the air*craft.

For further guidance on disinfection methods, its application, effects, frequency, and other topics, refer to RTCA-DO388/ EUROCAE-ED-287 Guidance Document on Aircraft Cleaning and Disinfection.

△ 6.3 Cleaning and Disinfection Products

Informed selection and the correct use of chemical products is vital in ensuring effective cleaning and disinfection of an aircraft without damaging the aircraft interior, systems, and equipment while minimizing the likelihood of the transmission of COVID-19 or any other communicable diseases.

For detailed guidance on disinfection products selection, application, effects, and other topics, refer to RTCA-DO388/ EUROCAE-ED-287 Guidance Document on Aircraft Cleaning and Disinfection.

△ 6.3.1 Product selection

The selection of chemicals to be used to mitigate pathogens must be safe for the aircraft use, with no harmful effect on crew, passengers, and employee's health.

(a) Refer to the local health authorities for recommendations on products effective against COVID-19 or other communicable disease.

Note: The selection of the product may need to be approved by the local authorities if applicable.

(b) Refer to the aircraft manufacturers (OEM) guidance for the most recent recommendations
Note: The ICAO CART Guidance includes OEMs recommendation to use a 70% Isopropyl Alcohol (IPA) solution as a disinfectant for the touch surfaces in the cockpit, cabin and cargo holds.

(c) Cleaning and disinfection products should comply with and be certified or tested according to OEM standards and/or industry test standards, such as SAE International standards as listed in the Section 4 of this document. Consultant with OEMs before using any disinfection agents that do not comply with SAE standards is required.

(d) Refer to the cleaning and disinfection product manufacturer's instructions to ensure that the proper application, frequency, quantity, ventilation and personal protection equipment is used.

△ 6.3.2 Product use

It is the airline's responsibility to ensure correct procedures and chemical products used by the ground handling or cleaning company are based on the aircraft manufacturers (OEM) recommendations and aligned with local health authorities. Any products used need to be approved by the airline.

It is important that the cleaning and disinfectant products are used exclusively according to the product specifications and manufacturer Safety Data Sheet (SDS), personnel uses relevant PPE and airlines ensure that the use is periodically reviewed and any effects monitored and evaluated within company SMS.

(a) Use premixed cleaning and disinfection liquids where possible to avoid mixing ratio errors.

(b) Special attention must be paid to the application instructions and mixing ratios (e.g. wipe on, wipe off, water rinsing, drying after cleaning, etc.).

(c) Use only the limited bottle sizes on board to minimize the risk of spilling the cleaning disinfection and disinfection solutions.

(d) Do not spray cleaning and disinfection liquids in the cargo compartment. Instead, apply as per the product and/or airline application instructions (e.g., wipe on/off).

(e) Do not allow cleaning and disinfection liquid to contact critical equipment (e.g. smoke detector, electronic door operation equipment and fire extinguishing discharge nozzle).

(f) Take precautions around potential sources of ignition, especially hidden sources such as electronic boxes mounted in the cargo compartment as disinfectants are flammable.

(g) Airlines should periodically inspect the aircraft interior and cargo holds to ensure that there are no long-term effects or damage over time due to frequent use of cleaning and disinfection products. If damage is observed, contact the OEM.

⚠ Caution:

(a) Use of non-certified cleaning and disinfection liquids can lead to severe damage to material in the aircraft's interior.
(b) Use of cleaning and disinfection liquids in the wrong mixing ratio or using the wrong application method can lead to severe damage to material in the aircraft's interior.
(c) Cleaning and disinfectant solutions tend to be oxidizers. The interior of an aircraft contains many materials susceptible to damage from oxidization. Care must be exercised when using cleaning products and disinfectants.
(d) Metals used in aircraft construction may corrode upon exposure to cleaning and disinfection products.
(e) Safety-critical cables and wires may deteriorate upon exposure and aircraft furnishings may have their fire-resistant properties reduced.
(f) Some cleaning and disinfection products, such as IPA, are flammable. Care must be exercised in the aircraft interior, especially near various electric installations and boxes as these are sources of ignition.

△ 7 Aircraft cleaning and disinfection on ground

During a pandemic, all existing cleaning best practices are, in principal, still applicable. However, they may need to be revised and amended based on the regulatory requirements, airport cleaning plan, and OEM's recommendations to include new measures addressing the threat.

Based on the conducted risk assessment, each airline may implement different cleaning and disinfection schedules, techniques, and products, which consider the operational circumstances and the duration of the disinfecting effects of the substance(s) used.

△ 7.1 Action prior to cleaning

To minimize person-generated contaminant concentrations during ground and flight operations, OEMs recommend maximizing total cabin airflow; therefore, care should be taken to avoid blocking air vents (particularly along the floor).

The following are general recommendations for cabin air considerations and there may be exceptions for specific aircraft models. It is strongly recommended that operators consult with the aircraft OEM for questions specific to an aircraft type.

(a) The aircraft Auxiliary Power Unit (APU) should be permitted to be used at the gate/stand to enable the aircraft's air conditioning system to be operated, if equivalent filtration from the external Pre-Conditioned Air (PCA) is not available.
(b) If the aircraft has an air recirculation system but does not have High-Efficiency Particulate Air (HEPA) filters installed, refer to OEM documents or contact the OEM to determine the recirculation system setting.
(c) It is recommended that fresh air and recirculation systems be operated to exchange the volume of cabin air before cleaning crew enter the aircraft for cleaning purposes.
    1. For those aircraft with air conditioning, run the air conditioning packs (with bleed air provided by the APU or engines) or supply air via an external PCA source for at least 10 minutes prior to the boarding process, throughout boarding and during disembarkation.
    2. For aircraft with HEPA filters, run the recirculation system to maximize flow through the filters.
    3. For those aircraft without an air conditioning system, keep the aircraft doors open during the turnaround to facilitate cabin air exchange (passenger doors, service door and cargo door) as much as practical.


Danger:
Ensure access doors are only in the open position if there is an appropriate boarding device or other equipment positioned at the door to mitigate danger of personnel injury.

Note: Ensure cleaning equipment and tools (e.g., vacuum cleaners brushes, brooms) are clean and hygienic prior entering the aircraft cabin and between use.

△ 7.2 Actions during cleaning

(a) Once on board, ventilation systems should be kept running while cleaning takes place.
Note: In some cases, depending on the technique used for disinfection, regulators may recommend that the air conditioner be turned off during the disinfection operation, and the passenger cabin fully ventilated after disinfection.
(b) To avoid contamination on board, cleaning crew shall:
    1. Be assigned specific tasks as much as possible.
    2. Use different cleaning materials in each task area (e.g. cloths, buckets, brushes, mops), potentially using color coded items.

(c) Use disinfection product as per the recommendation in the section on Cleaning and disinfection products.
(d) Clean and disinfect all defined areas in 7.3 by using approved disinfection products as per Cleaning and disinfection products section and appropriate cleaning materials/tools such as mopping, wiping, or any other approved techniques and procedures.

△ 7.3 Cleaning and disinfection tasks

The cleaning and disinfection tasks serve as a guideline on how to provide a safe and sanitary operating environment for passengers, crew, and cleaning personnel. For further guidance on aircraft cleaning refer to IGOM 3.7 Aircraft Cleaning and Disinfection.

The tasks, as defined in the subsequent tables, provide a framework for airlines. It is of each airline, as per their specific assessments and needs to:

(a) Establish which tasks they deem necessary to be completed during an aircraft cleaning interval.
(b) Adhere to airline specifications regarding cleaning and disinfection tasks.
(c) During a pandemic, it is essential that airlines perform a risk assessment based on the regulatory requirements, airport cleaning plan, and OEM recommendations to develop mitigation plans, including amending their existing cleaning and disinfection procedures.
(d) Review and update their cleaning matrices based on specific configurations of their aircraft types.
(e) Clean and disinfect cabin, seating, and crew rest areas in the same way as in sections 7.3.5 and 7.3.6 for cargo aircraft.
(f) Monitor high-contact surface areas in aircraft as much as possible, include such areas in their cleaning checklists.
(g) Ensure the cleaning and disinfection products are used in correct mixing ratio according to the application instructions and/or product safety data sheet (SDS).
(h) Ensure that the correct mixing ratio is used for relevant area as per SDS. There might be a different mixing ratio for the same product for different areas (e.g. 1:10 for cleaning in cabin surroundings and 1:5 for lavatories and galleys).
(i) Ensure the correct application method is used according to the application instructions and/or product SDS (e.g. apply with pre-moistened wipes or single use wetted cloth).
(j) To avoid contamination on board, cleaning staff shall carry their own cleaning equipment to avoid unnecessary exchanges of cleaning items between different teams or persons.

⚠ **Caution:**
(a) If spraying techniques are used, do not spray directly into power supply panels, lighting, vents, interphone, coffee makers or other electrical systems. Disinfectant should only be applied using a cloth in these areas.
(b) Immediately inform an airline representative if any of these areas are accidentally sprayed.
(c) Ensure cleaning and disinfection products are wiped off after application using a slightly moist towel, if required by the SDS. Residues of cleaning and disinfection products left on surfaces (e.g., tables) may lead to severe discoloration and permanent damage of the cabin interior.
(d) Ensure a suitable cloth is used for aircraft cabin cleaning.

△7.3.1 Flight deck

Tasks	Turn around	Layover
Clean and disinfect pilot and co-pilot seats, including armrests, table and seat controls.	☐	☐
Clean and disinfect seatbelt buckles.	☐	☐
Clean and disinfect flight controls (e.g. control column). *	☐	☐
Clean and disinfect the sidewall lining and associated controls (e.g. nose wheel steering tiller, display controls, electronic flight bag). *	☐	☐
Clean and disinfect instrument panel and associated controls (e.g. gear lever). *	☐	☐
Clean and disinfect the glareshield and associated controls (e.g., autopilot, warning/caution buttons). *	☐	☐
Clean and disinfect sun visors and surrounding area. *	☐	☐
Clean and disinfect overhead panel, including grips and handles. *	☐	☐
Clean and disinfect central the central console, including engine controls, flaps, communication units etc.*	☐	☐
Clean and disinfect pilot and copilot headsets. *	☐	☐
Clean the inside of the windshield with the designated product. *	☐	☐
Clean and disinfect cabin access door (both sides), handle and lock.	☐	☐
Extend, clean and disinfect the folding seats/jump seats and any associated equipment.	☐	☐
Wipe down pedals. *	☐	☐
Clean floor, vacuum carpet, empty waste boxes and wipe shelves.	☐	☐

⚠ **Caution:**

(a) Frequency of cleaning of the flight deck should account for both separation of the flight deck from the passenger compartment and frequency of crew transitions (CART).
(b) Adhere to airline specific procedures regarding cleaning the flight deck (e.g., the cleaning crew may only be permitted to enter flight deck when flight crew or maintenance personnel is present).
(c) Cleaning and disinfection products fluids for the flight deck can be different from fluids used for the cabin.
(d) Do not spray disinfectant directly on panels and screens, it should be applied with cloth.
(e) Ensure liquid does not seep into controls.
(f) Any accidental adjustment of important instruments during the cleaning process must be reported to the flight crew or maintenance personnel.
(g) Buckets shall not be brought into the cockpit.

Note: Cleaning and disinfecting of areas designated with an asterisk (*) above shall be done by personnel specifically trained for flight deck cleaning.

△ 7.3.2 Galleys

Tasks	Turn around	Layover
Clean and disinfect worktops, countertops and serviceable table.	☐	☐
Clean ovens.	☐	☐
Clean coffee makers.	☐	☐
Clean water boilers.	☐	☐
Clean and disinfect panels and doors.	☐	☐
Clean and disinfect switcher panels and handles.	☐	☐
Empty and clean waste compactors; add waste sac/box, if needed.	☐	☐
Clean and disinfect lockers/drawers.	☐	☐
Clean and disinfect trolley containers and storage.	☐	☐
Clean and disinfect collapsible trolleys.	☐	☐
Drain and disinfect sinks, including taps and drain plug .	☐	☐
Remove trash from bin compartments and clean/disinfect bin area, including flap.	☐	☐
Sweep, mop and disinfect floor.	☐	☐
⚠ **Caution:** Clean ovens and aluminum surfaces with detergents as per recommended standards.		

△ 7.3.3 Cabin crew seats and service/entry door lining panels

Tasks	Turn around	Layover
Clean and disinfect each attendant seat, seatbelts and surrounding location.	☐	☐
Clean and disinfect cabin crew intercom.	☐	☐
Empty and clean seat pockets.	☐	☐
Inspect emergency leaflets for damage and clean, disinfect or replace.	☐	☐
Arrange or remove and replace literature and amenities.	☐	☐
Clean and disinfect seat upholstery and remove any evident stains.	☐	☐
Clean and disinfect door frame, including door panels, sills, exit doors and emergency slide cover.	☐	☐

△ 7.3.4 Lavatories

Tasks	Turn around	Layover
Clean mirrors and windows if applicable, using authorized glass cleaners.	☐	☐
Ensure all soap dispensers are functional and refilled with liquid soap.	☐	☐
Clean and disinfect soap dispenser.	☐	☐
Clean and disinfect hand basin, handles and steel fittings.	☐	☐
Clean and disinfect sidewall panels and ceiling.	☐	☐
Clean and disinfect shelves.	☐	☐
Clean and disinfect diaper changing table if available.	☐	☐
Clean and disinfect toilet bowl, shroud, seat and flushing mechanism (lever or button).	☐	☐
Empty the waste bin(s) and replace waste sac, if applicable. Clean and disinfect compartment, including flap before reinstalling bin(s).	☐	☐
Clean and disinfect the floor.	☐	☐
Ensure toilet compartment is dressed and stocked with amenities required for flight.	☐	☐
Clean and disinfect lavatory door (both sides) including door lock, knobs/lever, grip, door grilles and coat hook(s) if applicable.	☐	☐

⚠ **Caution:**

(a) Immediately wipe off any cleaning/disinfectant liquid spills on the surfaces to prevent damage or deterioration.

(b) Toilet cleaning shall be performed from top to bottom for hygienic reasons.

(c) Use only towels identified specifically for toilet cleaning. (Do not reuse the mops and towels used for toilet cleaning outside of lavatories.

△ 7.3.5 Passenger seating area

Note: The passenger seating area includes its surroundings.

Tasks	Turn around	Layover
Use a vacuum cleaner to remove loose particles from seats, floors, carpets and curtains after cleaning and disinfecting.	☐	☐
Remove headcovers and pillow covers from seats, if applicable.	☐	☐
Clean and disinfect cabin windows, window shades, dimmable window controls if applicable, sidewall lining and ceiling, including air nozzles.	☐	☐
Clean and disinfect magazine racks.	☐	☐
Clean and disinfect interior and exterior of overhead bins, including handles.	☐	☐
Remove all waste from seat pockets, arm rests, back rest pockets, shoe bins and seat lockers, then clean and disinfect.	☐	☐
Remove and replace literature and amenities as needed and arrange according to airline standards.	☐	☐
Clean and disinfect or replace emergency leaflets.	☐	☐
Clean, disinfect and dry both sides of tray tables (including cocktail table if applicable) including locking mechanism.	☐	☐
For fabric seat covers, use vacuum cleaner to remove loose particles. For leather seat covers, wipe and ensure seats are dry.	☐	☐
Remove any visible stains on seats or request change in fabric.	☐	☐
Clean and disinfect seat belts and buckles.	☐	☐
Clean and disinfect arm rests In-flight Entertainment (IFE) screens and passenger control units (e.g., reading lights, air nozzles, IFE remote control, seat controls).	☐	☐
Clean and disinfect infant bassinets, extra seat belts and other amenities, if applicable.	☐	☐
Dress the passenger seat to signify clean as per airline standards.	☐	☐
Clean ventilation grids/grilles.	☐	☐

⚠ **Caution:**

(a) Be careful while handling disposable bags to avoid sharp objects that may have been disposed of by passengers.
(b) If there is a chewing gum stain on the floor or seats, use gum remover to remove the stain rather than sharp objects.
(c) For some parts of the aircraft (e.g., closets and doghouse), assistance from Engineering may be requested to remove emergency equipment to enable cleaning and disinfection.

△ 7.3.6 Crew rest compartments

Tasks	Turn around	Layover
Dispose of waste from closets and waste boxes.	☐	☐
Clean and disinfect intercom and control consoles (e.g. reading lights and air nozzles).	☐	☐
Clean and disinfect ceiling and the light switches	☐	☐
Clean and disinfect beds and belts. Replace blankets and pillow covers, if applicable. Ensure enough bedding is provided for the number of crew operating.	☐	☐
Clean floor and cabin stairs, if applicable and vacuum carpet.	☐	☐

7.3.7 Cargo hold

Tasks	Turn around	Layover
Clean and disinfect cargo door surroundings and door handles for all lower deck cargo holds (FWD, AFT and Bulk), in addition to main deck cargo door for cargo aircraft.	☐	☐
Clean and disinfect cargo loading control (CLS) panels, including cargo joystick in ceiling and latches, if applicable.	☐	☐
Clean and disinfect all access panels and service access points, including cargo door control panels,	☐	☐
Clean and disinfect door net stanchions, net attachment fittings and tie down points, if applicable in bulk compartment.	☐	☐
Clean and disinfect light switches.	☐	☐
Clean and disinfect high touch point areas in upper deck if applicable (e.g. B747 cargo aircraft) and main deck (all cargo aircraft).	☐	☐

⚠ **Caution:**

(a) When cleaning and disinfecting of the complete cargo hold, please refer to OEM guidance for further clarification of appropriate techniques to be used.

(b) Any aircraft where personnel have to work inside the compartment to manually load/unload, cleaning of floor areas should be considered (e.g., bulk loaded cargo holds).

7.3.8 Unit Load Device (ULD) cleaning

(a) After unloading, all unit load devices must be cleaned from dirt and other possible contaminations.
(b) ULDs which have been used for the transport of commodities such as live animals, edible or inedible animal and vegetable products, or ULDs that have been exposed to leakage from dangerous or non-dangerous goods must be cleaned in line with national and international health, safety and quarantine requirements.
(c) After the ULD has been cleaned and disinfected properly, it can be used again for the dispatch of cargo.

Please refer to ICHM 13.1.2 for further details.

7.3.9 Temperature/Thermal Controlled Container (TCC)

(a) The container's inside shall be checked entirely for cleanliness, including all recesses, prior to build-up.
(b) It is recommended thorough washing be performed, e.g. with a stream of water under pressure (see ULDR SS 50/4) before each use.
(c) If there is any doubt of possible biological contamination or if required as a sanitary precaution by the shipper when intended contents are destined for human consumption, the inside must be thoroughly disinfected, e.g. with steam up to 110°C (230°F), or a product containing e.g. chlorine.
(d) Any chemicals used in the cleaning and disinfection process must be compatible with the container materials (see manufacturer's instructions) and accepted by the sanitary Authorities (see ULDR 1.5.17 in Section 1).

Note: Cleaning and/or disinfection may also be necessary after the container arrival and its break-down.

Refer to ICHM Chapter 9 for further details.

7.4 Electrostatic spraying and fogging

7.4.1 General

Although electrostatic spraying and fogging is not currently recognized and endorsed by OEMs as industry standards as it is not fully tested for long term effect on the avionics and aircraft interior, following general /principles have been developed as it is becoming more widespread use.

Decision on use of such method is always airline responsibility. Airlines should always consult with OEMs and perform Risk Assessment before deploying this method.

This is NOT a comprehensive list therefore please refer to equipment manuals for more details and specific instructions on equipment use.

7.4.2 Procedures and recommendations

(a) Follow the equipment and chemical manufacturers instructions related to use of equipment and application of chemicals.
(b) Use designated PPE (gloves, eye goggles, face shield, long sleeve clothing etc.).
(c) Prepare cabin following airline instructions (e.g. close all overhead bins, pull down all window shades) and notify (e.g. some type of visual indication) that spraying is occurring or eminent.
(d) Follow sequence of spraying – (e.g. back to front and spray galleys, lavatories, crew rests, FA closets, overhead bins, aisles, and seat rows. End spraying at the forward part of the aircraft}.
(e) Spray away from the direction of the body.
(f) When spraying keep slow/steady pace.
(g) Apply a uniform coating over the surface being disinfect.

(h) Ensure the sprayer does not apply chemicals in a manner that oversaturates equipment or allows the chemical to pool or run (drip) on the surfaces, particularly electronic hardware.
(i) Avoid any control panels, displays or sensitive equipment (other disinfection techniques to be used).
(j) Surfaces need to be sprayed/fogged for the specific contact time recommended by the chemical manufacturer.
(k) After spray application, wipe damp surfaces with rag if required.

Danger:

Electrostatic sprayers may interfere with sensitive medical devices such as pacemakers, defibrillators, or similar devices. DO NOT operate this machine or stand within 10 feet if you use such medical device.

Caution:

(a) Do not point nozzle gun at any person.
(b) Ensure cabin aisles are clear to prevent a slip, trip or fall hazard.
(c) Ensure flight deck door is closed – DO NOT perform spraying/fogging in Flight deck.
(d) Ensure the aircraft has not yet been catered – NEVER spray/fog a galley that has been already catered for its departing flight.
(e) Ensure to communicate to the employees on or near the aircraft that spraying/fogging will be soon underway except for those operating the spraying/fogging machinery. No unauthorized personnel shall be on board or enter the aircraft until permitted to do so.
(f) DO NOT spray at flight deck (please see xxx Flight Deck checklist) control panels, displays or sensitive equipment as per airline instructions.
(g) DO NOT overspray any area. This will lead to oversaturation and lingering mist in the air.
(h) DO NOT shake the nozzle when spraying.
(i) DO NOT spray any galley area in front of an open aircraft door to the outside to avoid lingering mist in the air.
(j) To avoid electrical shock, do no touch or insert anything in nozzle of the sprayer/fogger

△ 7.5 Actions after cleaning

After cleaning and disinfection, ensure cleaning crew disembark with all items for cleaning including all garbage and that the following provisions are followed:

(a) Disposal of waste must be done in accordance with local airport authority regulations, refer to section on Waste management during a pandemic in this document.
(b) Staff disembarking the aircraft with waste materials shall wear gloves to protect themselves and dispose of gloves after the disposal process.
(c) Do not obstruct the passenger boarding bridge or steps with waste bags.
(d) Do not throw waste bags onto the ramp from the aircraft or from steps.
(e) If any amenities are to be loaded prior to departure, ensure this is done and indicated in the handover documentation.

△7.5.1 Handover procedures

When required a handover protocol should be established, including a record to indicate that the aircraft has been cleaned and disinfected according to the ICAO Aircraft cleaning and disinfection sheet provided by CART or airline procedures .

Note: For lost, found, damaged or suspicious items:

- *Do not check/open any items found as the nature of the contents is unknown and has the potential of being harmful/dangerous.*

- *Any lost property found must be handed in according to local procedures.*
- *Any seat or cabin interior/area found damaged must be reported, as appropriate.*
- *Any suspicious item found must be immediately reported as per local procedures.*

Caution:

Limit the number of personnel moving into/out of a cleaned aircraft to maintain the sterile environment prior to boarding.

△ 8 Cleaning and disinfection during an event

8.1 Suspected or confirmed COVID case onboard

For procedures for cabin crew and cleaning crew, in case of this event, please refer to IATA Suspected Communicable Disease Guidelines for cleaning crew, as well as EASA - Interim guidance on Aircraft Cleaning and Disinfection and CDC Updated Interim Guidance for Airlines and Airline Crew: Coronavirus Disease 2019 (COVID-19). For details on any more specific cabin cleaning measures during the flight, please refer to Guidance for Cabin Operations During and Post Pandemic.

△ 8.2 Aircraft contaminated with body fluids

When contaminated with blood, respiratory secretions, vomit, excretions and other liquid (contaminants), the aircraft cabin should be disinfected by ground cleaning crew or specially qualified personnel after disembarkation.

Air Conditioning Unit (ACU) should be adjusted to ensure full ventilation is completed and then turned off. Once the air ventilation is finished:

(a) Wear disposable gloves and other PPE according to local instructions.
(b) Prepare disinfectant Absorb the contaminant(s) into a towel or apply absorbent powder and disinfectant to the contaminants evenly.
Note: Absorbent and disinfectant used must have been tested and approved for the interior material being cleaned.
(c) Place the used towel and gloves I a biohazard or other waste bag.
(d) When using absorbent powder, remove the coagulated contaminants with portable pickup shovels and place into biohazard waste bags.
(e) Clean and disinfect the contaminated area wearing new gloves. It is important to follow the application method and effective contact time as per the SDS.
(f) Remove gloves and clean/disinfect hands before removing other PPE in the following order:
    1. Take off protective suits (aprons) and gloves.
    2. For visibly soiled hands, wash with soap and water thoroughly.
    3. Take off goggles and facial mask/shield.
    4. Apply skin disinfection/hand sanitizer to clean hands and other parts of the body that may have been exposed to contaminants.
    5. Place all used PPE and contaminated items in a biohazard waste bag and seal the bag.
    6. Dispose of the biohazard as per local regulations.

Note: When cleaning and disinfection was initially performed by cabin crew during flight, they should inform ground departments at destination to prepare for additional cleaning and/or disinfection, if need be, and disposal of biohazard.

8.3 Communication between flight crew and ground crew

In case of an event as described in Sections 8.1 and 8.2, flight crew should communicate with the appropriate ground operations handling teams regarding event details to ensure that cleaning crew are prepared to meet the aircraft with the appropriate PPE and equipment. There should be a process in place where cleaning crew are informed of an event and therefore follow designated cleaning and disinfection procedures.

9 Cleaning of cargo hold while handling of dangerous goods and special cargo

9.1 Identification of possible dangerous goods spill

(a) Before loading on an aircraft, ULDs must be inspected and found free from any evidence of leakage from or damage to any dangerous goods contained therein.
(b) Any package, which appears to be damaged or leaking, must be removed from the aircraft and safe disposal arranged. Packages or overpacks containing dangerous goods must be inspected for signs of damage or leakage upon unloading from the aircraft or ULD.
(c) If evidence of damage or leakage is found, the position where the dangerous goods or ULD was stowed on the aircraft must be inspected for damage or contamination and any hazardous contamination removed.

Refer to IATA Dangerous Goods Regulations (DGR) for further details.

9.2 Infectious substances

If any person responsible for the carriage of packages containing infectious substances becomes aware of damage to or leakage from such a package, that person must:

(a) Avoid handling the package or keep handling to a minimum.
(b) Inspect adjacent packages for contamination and put aside any that may have been contaminated.
(c) Inform the appropriate public health authority or veterinary authority and provide information on any other countries of transit where persons may have been exposed to danger.
(d) Notify the shipper and/or the consignee.

9.3 Radioactive materials

(a) If it is evident that a package or overpack of radioactive material or a freight container for radioactive material is damaged or leaking, or if it is suspected that the package or overpack or freight container may have leaked or been damaged, access to the package or overpack or freight container must be restricted and a qualified person must, as soon as possible, assess the extent of contamination and the resultant radiation level of the package or overpack or freight container.
(b) The scope of the survey must also include the aircraft, aircraft equipment, the adjacent loading and unloading areas and if necessary, all other material which has been carried on the aircraft.
(c) When necessary, additional steps for the protection of human health, in accordance with provisions established by the relevant competent authority, must be taken to overcome and minimize the consequences of such leakage or damage.

9.4 Cleaning of aircraft cargo compartments (after animal transportation)

(a) If there is any spillage, carrier maintenance personnel must be alerted.
(b) Wear impervious, washable or disposable, gloves and boots which must be washed, then disinfected or destroyed after each use.
(c) The interior of cargo compartment must be thoroughly cleaned of all foreign matter and then disinfected using methods acceptable to aircraft management before being loaded with livestock.
(d) All affected holds, floors and shelves must be thoroughly washed or swabbed with a solution of approved solvent or detergent followed by the use of a suitable disinfectant. It is recommended that a solution with 4% sodium carbonate mixed with 0.1% sodium silicate or a solution with 0.2% citric acid

be used for aircraft disinfection purposes. It is not necessary to flood the surfaces to effectively deodorize and disinfect the area.

(e) Spray the hold with an approved deodorant, closing all doors immediately after spraying to obtain maximum benefit.

(f) All removable equipment, penning and containers, including loading ramps, must be thoroughly cleaned and disinfected in accordance with the requirements of both the exporting and importing countries.

(g) It is advised that no equipment with which animals will come into direct contact be replaced in the aircraft until it has been washed with clean water after disinfection to remove any traces of disinfectant which might cause damage to the aircraft structures.

Refer to IATA Live Animals Regulations (LAR) for further details.

9.5 Transport of perishable products spill

As perishable shipments are handed over to the airline fully packaged, the airline will assess the condition of the outer packages for its ability to withstand regular handling during air transportation and search for obvious signs of damage such as crushed boxes, smells and odors, leakages, spills, etc.

If spillage or leakage of liquid takes place, contaminating the aircraft interior, the aircraft captain and/or the airline's airport or engineering representative must be notified as soon as possible so that appropriate follow- up action can be taken.

This written procedure should be well documented and appropriately reported since spills can cause serious damages to aircraft systems or structures (refer to the in-house company procedures manual). Do not try to clean the spill without prior consultation to that effect.

Refer to IATA Perishable Cargo Regulations (PCR) for further details.

△ 10 Waste management during pandemic

The COVID-19 pandemic has significantly increased the volumes of healthcare wastes from hospitals and clinics requiring specialized handling and treatment. There is an obligation on the sector and its regulators to not only ensure the health of its passengers and staff but to also confirm that uncontaminated cabin and cleaning wastes are not contributing to this growing disposal problem. IATA encourages airlines to meet with airport and local health authorities and their service providers (catering and cleaning companies) to determine appropriate COVID-19 waste management procedures.

This section combines publicly available best practices, but it is recognized that research on COVID-19 transmission and mitigation measures is advancing rapidly and so the information in this document will be regularly updated.

10.1 Changes during flight resumption

As flights resume, cabin waste volumes are expected to be lower than normal due to restricted inflight service offerings, but the following waste components are likely to increase:

(a) Discarded personal protective equipment (PPE) from masks and gloves worn by crew, passengers and cleaners,
(b) Empty plastic hand sanitizer bottles,
(c) Discarded sanitizer wipes and their packaging,
(d) Plastic packaging from sealed food and drink,
(e) Cleaning wastes including used paper towels, disposable cloths, empty plastic disinfectant bottles and mop heads,

10.2 Cabin waste regulations

Cabin waste is already subject to legislation that ensures it is handled, stored and disposed of appropriately to minimize pollution and disease risk. In fact, many countries including Australia, Brazil, Canada, Members States of the European Union, New Zealand and USA already require cabin waste from international flights to be subject to specialized handling, treatment and disposal.

According to the International Health Regulations (2005), States (competent authorities) must ensure, to the extent practicable, that passenger facilities at international airports and on aircraft are kept free of sources of infection and contamination. Competent authorities may impose additional restrictions on cabin waste during the COVID-19 pandemic including the need to disinfect waste bags; bans on reuse/recycling; need for double bagging; sealing; labelling and specialist handling and treatment including steam sterilization, incineration and chemical treatment.

The waste restrictions imposed by national health authorities during the pandemic should be respected, at all times. However, in the absence of such measures or whilst agreeing cabin waste procedures during the pandemic with the authorities and service providers, this may prove useful.

10.3 Cabin waste risk

The primary mechanism of the COVID-19 virus spread is respiratory droplets and, although there is the possibility of surface contamination on cabin interiors, inflight products and waste, this can be minimized by regular cabin interior cleaning and hand hygiene. Research indicates that the virus is more stable on plastic and stainless-steel surfaces than copper and cardboard and that viable virus was detected up to 72 hours after application to these surfaces[1]. A UK regulator highlights that this "research involved exposing the surfaces to high viral loadings in a laboratory environment and is, therefore, likely to represent a "worst case" scenario[2].

[1] **https://www.nejm.org/doi/full/10.1056/NEJMc2004973**

[2] **https://www.letsrecycle.com/news/latest-news/uk-wish-coronavirus-covid19-waste/**

10.4 Cabin waste classification

Normal: cabin wastes generated during flight operations and cleaning waste generated after a flight where **no passenger or crew member exhibits COVID-19 symptoms** should be handled as **normal** waste, as recommended by WHO[3].

Biohazardous: If a **passenger or crew member does exhibit COVID-19 symptoms,** all waste materials including part-consumed meals, beverages and disposable items including used paper towels, tissues and PPE generated whilst treating or supporting the passenger or crew member should be treated as potentially **biohazardous waste**. The cleaning operatives should informed that a suspected COVID-19 case was present on the flight and that the cleaning wastes should also be placed in a biohazard waste disposal bag or double bagged in standard plastic waste bag (if a biohazard bag is not available). The bags should be labelled and sealed for specialist handling, storage and treatment. The airport authority and aircraft service providers must be informed of the presence of potentially biohazardous waste.

10.5 Cabin waste treatment and disposal

Normal: cabin wastes should be handled and stored using normal waste procedures and disposed using the municipal landfill or incinerator. The reuse and recycling of waste from these flights should continue but recyclable items should be segregated on-board and should not contain any discarded PPE. For those countries that classify cabin waste from international flights as biohazardous for agricultural health reasons (International Catering Waste – ICW), airports or local waste management contractors already subject the waste to special handling and thermal treatment (incineration or steam sterilization).

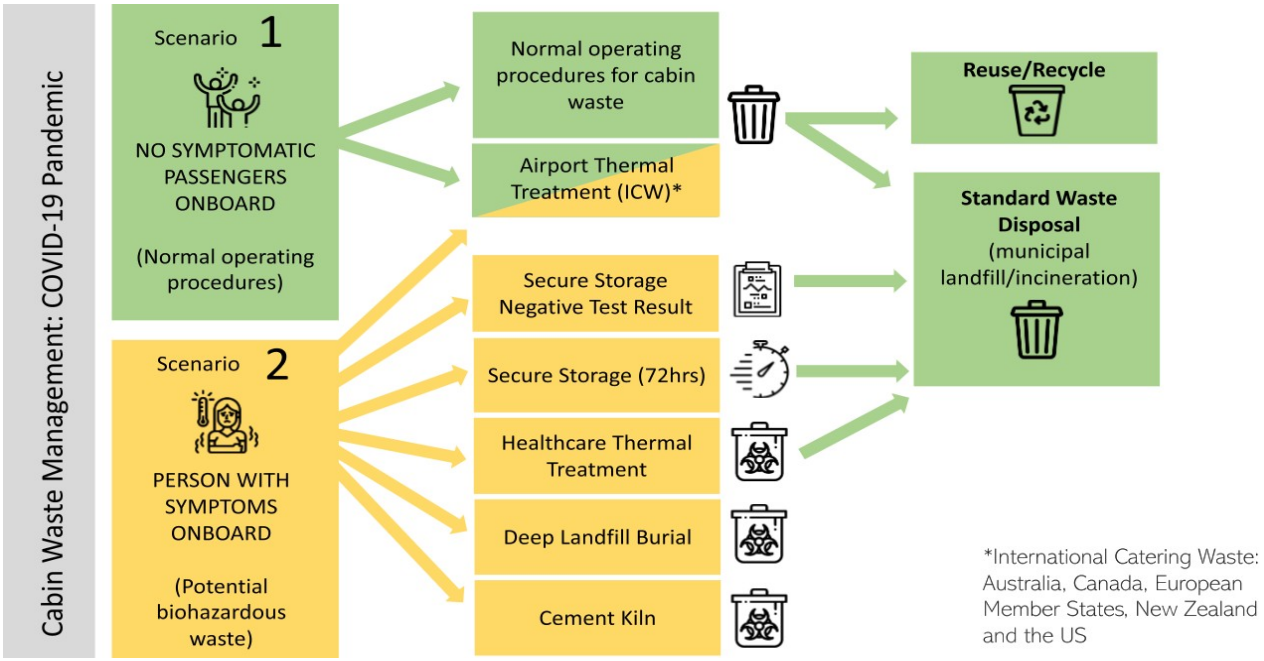
Biohazardous: there are 6 potential options for the treatment and disposal of potentially biohazardous cabin waste resulting from the pandemic.

These include the following:

(a) Airport Thermal Treatment at the airport or local waste management contractor's facility with no additional requirements deemed necessary for potentially biohazardous waste
(b) Secure Storage at the airport or local waste management contractor's facility until the test results indicate that the passenger or staff member did not have COVID-19. The waste can then be treated as "normal".
(c) Secure Storage for 72 hours at the airport or local waste management contractor's facility. The waste can then be treated as "normal".
(d) Healthcare Waste Thermal Treatment – the wastes can be deemed biohazardous and sent directly for thermal treatment at a local healthcare waste facility.
(e) Deep Landfill Burial: Many developing countries lack the infrastructure to treat healthcare waste and the International Solid Waste Association (ISWA) recommends, that in such circumstances, COVID contaminated wastes are either securely stored for over 72 hours and/or sent for disposal in a landfill under closely controlled conditions[4].
(f) Cement Kilns – In the absence of other alternatives, the high temperatures, long residence times and alkaline environment of cement kilns are considered suitable for treating biohazardous waste. This option has already been used in China[5] and Spain[6], in response to the COVID-19 pandemic.

[3] **https://apps.who.int/iris/bitstream/handle/10665/331488/WHO-2019-nCoV-Aviation-2020.1-eng.pdf**
[4] **https://www.iswa.org/fileadmin/galleries/0001_COVID/ISWA_Waste_Management_During_COVID-19.pdf**
[5] **http://www.ecns.cn/news/2020-02-25/detail-ifztvsqr0580848.shtml**
[6] https://www.efe.com/efe/english/destacada/covid-waste-burn-it-or-dump/50000261-4239489

The flowchart below summarizes the pandemic cabin waste treatment and disposal options:



10.6 Pandemic waste minimization

IATA recommends that passengers wear reusable face coverings and crew wear surgical-type masks. Airlines may wish to procure surgical masks fitted with replaceable filters. If a passenger chooses to wear their own surgical-type masks they should be encouraged to only dispose of this mask after they have left the aircraft, in a closed waste bin. For crew or passengers that wish to replace their surgical-type mask or gloves during the flight, the discarded items should be placed in the lavatory waste bins. In addition, airlines should consider. working with airports to provide hand sanitizer dispensing units in the terminal that could be used to refill personal sanitizer bottles.

10.7 Single use plastic (SUP) ban suspensions

Based on the UN Environment report, there has been a surge in SUP bans with over 127 countries regulating the consumption of plastic bags, and 27 more extending these bans to other SUP products, including plates, cups, straws and materials such as polystyrene[7]. Airports and civil aviation authorities have added an extra layer of complexity by applying their own SUP restrictions. Unfortunately, these SUP bans are not compatible with medical restrictions being imposed on flights during the pandemic. Airports and civil aviation authorities should allow the use of SUP for medical, hygiene and safety purposes during the pandemic including biohazardous waste bags; discarded PPE; empty sanitizer bottles, sanitizer wipes and their packaging and packaging from sealed food and drink.

10.8 Engagement plan & training

Airlines should prepare a written plan to share with stakeholders including cleaning companies regarding their COVID-19 waste management procedures and to communicate the information accordingly. In addition, we would also recommend training for crew in the handling of potentially biohazardous waste.

[7] https://www.unenvironment.org/resources/report/legal-limits-single-use-plastics-and-microplastics

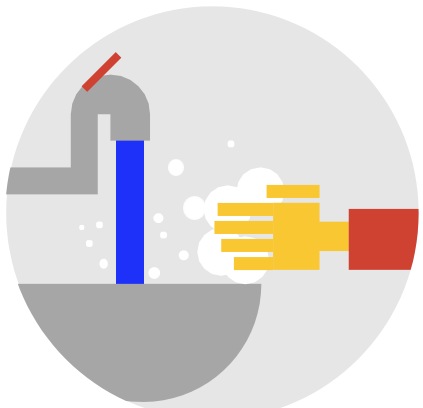
△ 11 Inquiries and feedback

This document is a living document and is updated based on the industry needs. It includes procedures of IGOM chapter 3.7, various regulatory and industry guidance as listed in section 4 of this document as well includes the Best Practices from our stakeholders within IATA governance.

Please send any further questions, recommendations, or inquiries to groundops@iata.org

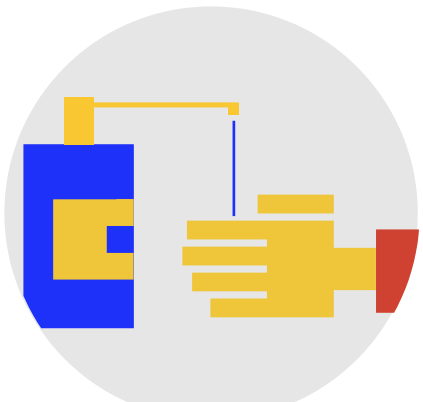
Attachment 1: Poster in staff area

Instructions for aircraft cleaning staff biosafety during COVID-19



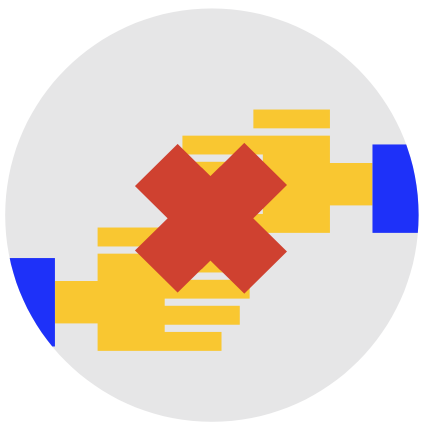
Regularly wash your hands

Use liquid soap and water to wash your hands for at least 20 seconds every time you enter the building.



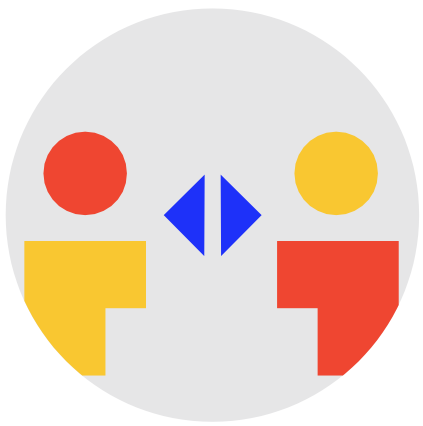
Disinfect

When handwashing is not possible, disinfect your hands with an alcohol-based hand rub.



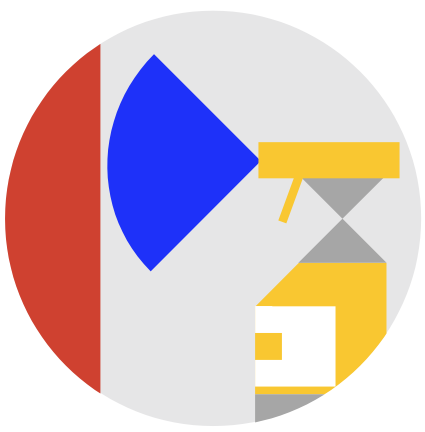
Avoid shaking hands

Remember that the virus spreads through coughing and sneezing via airborne droplets, as well as through direct contact.



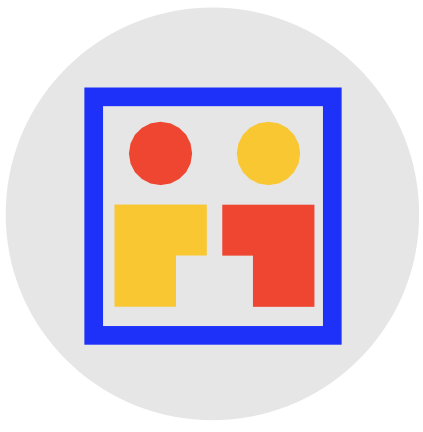
Respect physical distancing

Maintain a safe distance from others by following floor markings or other indicators. Drivers to stay in their vehicles until instructed and follow local procedures.



Clean regularly

Disinfect all frequently touched surfaces and all the equipment between uses.

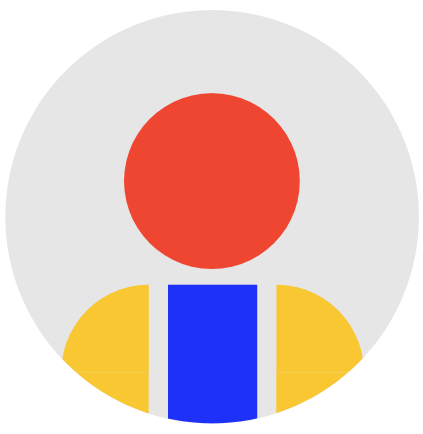


Maintain the distance

Avoid entering enclosed rooms with other people present or wear appropriate personal protective equipment.

Use your own cleaning equipment

Ensure you don't touch other people's equipment.



Follow any company, local or national guidance and regulations, especially if you show potential symptoms.

BE RESPONSIBLE.

STAY SAFE.

IATA

DEDICATED TO HELPING BUSINESS ACHIEVE ITS HIGHEST GOALS.

NBAA

AIRCRAFT DISINFECTION AND CLEANING PROCEDURES

On Jan. 30, 2020, the World Health Organization (WHO) declared that the outbreak of **Coronavirus Disease 2019 (COVID-19)** constitutes a Public Health Emergency of International Concern (PHEIC), and on March 11, 2020, WHO characterized the outbreak of COVID-19 as a pandemic.

FAA and CDC recommend that air carriers and crewmembers take precautions to avoid exposure to COVID-19. These precautions can be found in SAFO 20003. CDC has also provided recommendations for aircraft operators to clean and disinfect aircraft.

CDC AIRCRAFT CLEANING RECOMMENDATIONS

If no symptomatic passengers were identified during or immediately after the flight:

- FIollow routine operating procedures for cleaning aircraft, managing solid waste, and wearing personal protective equipment (PPE)

If symptomatic passenger(s) are identified during or immediately after the flight, routine cleaning procedures should be followed, and enhanced cleaning procedures should also be used as follows:

- Clean porous (soft) surfaces (e.g., cloth seats, cloth seat belts) at the seat of the symptomatic passenger(s) and within 6 feet (2 meters) of the symptomatic passenger(s) in all directions.
    - Clean porous (soft) surfaces (e.g. seat covers and carpet) by removing visible contamination if present and using appropriate cleaners that are compatible with aircraft surfaces and components in accordance with the manufacturer's instructions. For items that can be laundered, use the warm setting and dry items completely on high heat.
- Clean non-porous (hard) surfaces (e.g., leather or vinyl seats) at the seat of the symptomatic passenger(s) and within 6 feet (2 meters) of the symptomatic passenger(s) in all directions, including: armrests, plastic and metal parts of the seats and seatbacks, tray tables, seat belt latches, light and air controls, cabin crew call button, overhead compartment handles, adjacent walls, bulkheads, windows and window shades, and individual video monitors.
    - Clean non-porous (hard) surfaces with disinfectant products with EPA-approved emerging viral pathogens claims that are expected to be effective against the virus that causes COVID-19 (SARS-CoV-2) and ensure these products are compatible with aircraft surfaces and components. All products should be used according to label instructions (e.g., concentration, application method and contact time, PPE).
- Clean lavatories used by the symptomatic passenger(s), including: door handle, locking device, toilet seat, faucet, washbasin, adjacent walls, and counter.
- Properly dispose of any items that cannot be cleaned (e.g., pillows, passenger safety placards, and other similar items as described below).

RECOMMENDED PPE DURING ENHANCED CLEANING

- Disposable gloves that are recommended by the manufacturer of the disinfectant should be worn.
- Disposable gowns should be worn while cleaning the cabin and lavatories.
- If splashing is possible, eye protection, such as a faceshield or goggles and facemask may be required according to the manufacture's label.

GENERAL RECOMMENDATIONS DURING THE ENHANCED CLEANING PROCESS:

- Ground and cleaning crews should not board the plane until all travelers have disembarked.
- Ventilation systems should be kept running while cleaning crews are working aboard the airplane.
- If visible contamination (e.g., a body substance such as blood or body fluids) is present, routine cleaning procedures should be followed based on blood or body substance spill management according to , 29 CFR 1910.1030.OSHA's Bloodborne Pathogen Standard, 29 CFR 1910.1030.
- Operators should ensure workers are trained on the hazards of the cleaning chemicals used in the workplace in accordance with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.
- Operators should train ground and cleaning crews on and require that crew members demonstrate an understanding of when to use PPE, what PPE is necessary, how to properly don (put on), use, and doff (take off) PPE.
- After removing PPE, cleaning staff should immediately clean hands with soap and water for at least 20 seconds. If soap and water are not available and hands are not visibly dirty, an alcohol-based hand sanitizer that contains at least 60% alcohol may be used. However, if hands are visibly dirty, always wash hands with soap and water.

- Cleaning staff should immediately report breaches in PPE (e.g., tear in gloves) or any potential exposures (e.g., contact with blood or body fluids without wearing appropriate PPE) to their supervisor.
- Cleaning staff should dispose of PPE and other disposable items used in cleaning following the airline's routine procedures.
- Ground crews assigned to wastewater management operations should follow routine procedures.
- Employers should educate workers to recognize the symptoms of COVID-19 and provide instructions on what to do if they develop symptoms.
    - Cleaning staff should immediately notify their supervisor if they develop symptoms of COVID-19.

The following recommendations have been developed with NBAA members and professional aircraft detailers:

RECOMMENDED PRODUCTS

The products listed here are some options, but not the only options, that have been tested and proven safe for use on aircraft interiors. Additional disinfectants for use against COVID-19 can be found on the EPA's website [https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2]. However, these products require testing on interior surfaces prior to full use.

- Disposable medical grade gloves
- Safety glasses or goggles
- N95 respirator mask
- Microfiber towels
- Terry cloth towels
- Sontara aerospace wipes
- Celeste Sani-Cide Disinfectant
- Celeste Sani-Cide EX3
- Celeste Sani-Cide FSC
- Perrone Leather Cleaner & Conditioner

INTERIOR DISINFECTION PROCEDURES

It is recommended that the following procedures are carried out by trained personnel. All manufacturer guidelines and instructions should be followed.

Ensure all crew and passengers have exited the aircraft. Adorn all personal protective equipment.

Use new microfiber and towel products when transitioning between sections of the aircraft. Do not transfer use from one area to another. Replace gloves, respirators and all towel products when moving to a different aircraft.

Galley & Kitchen Areas

1. Aircraft galley and food prep areas should receive disinfection with Sani-Cide FSC. After 30 seconds of contact time, surfaces can be wiped clean with a new microfiber cloth. Surfaces are now ready for use.

2. Trash bins should be emptied, and all garbage removed from aircraft.

3. Mirrors, glass and screens should be cleaned with Sani-Cide EX3.

Cabin Area

1. Working in small areas, spray hard surfaces with Sani-Cide Disinfectant or EX3 and allow a contact time of 5 minutes prior to wiping clean with a microfiber cloth. Following disinfection, surfaces can be cleaned with an interior product to provide a final finish.

2. Spray and wipe leather surfaces with EX3. Follow by cleaning with Perrone Leather Cleaner/Conditioner.

3. Upholstery and carpet should be lightly misted with EX3 and allowed to air dry.

Lavatory Area

1. Spray toilet area with EX3 or Disinfectant and allow the full contact time. Using Sontara wipes or a similar cloth product, wipe all areas clean. Immediately dispose of cloths and gloves into a dedicated trash bin outside of the aircraft.

2. Using new gloves, spray remaining hard surfaces in lav area and wipe clean with a microfiber cloth.

Flight Deck & Cockpit Area

Due to the delicate nature of instruments, screens and components found in the cockpit area, it is recommended to use approved procedures and products in accordance with OEM guidance.

National Business Aviation Association
1200 G Street NW, Suite 1100
Washington, DC 20005
www.nbaa.org
(202) 783-9250 | ops@nbaa.org

ACKNOWLEDGMENTS

NBAA thanks the volunteers of who developed and reviewed this association publication. The principal author is Tyler Harper of AEM Logistics, who can be reached at tharper@aemlogistics.com. For additional guidance on Coronavirus, visit the NBAA website at nbaa.org/coronavirus.

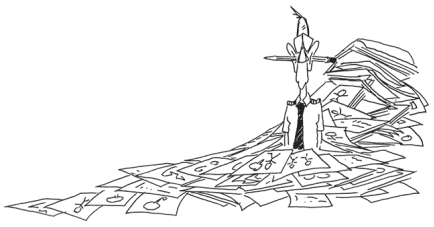
ABOUT NBAA

Founded in 1947 and based in Washington, DC, the National Business Aviation Association (NBAA) is the leading organization for companies that rely on general aviation aircraft to help make their businesses more efficient, productive and successful. Contact NBAA at 800-FYI-NBAA or info@nbaa.org. Not a member? Join today by visiting nbaa.org/join.

Aircraft cabin cleaning as a safety issue? Yes.

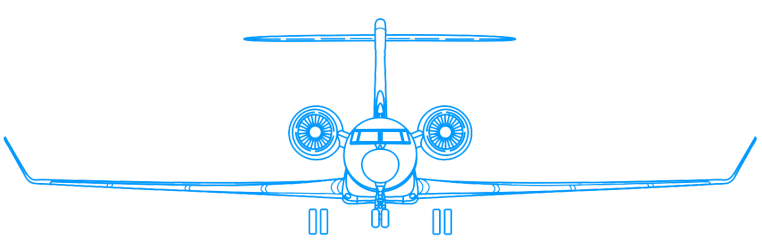
— James Albright

I've had a few flights where passengers were overcome by the fumes caused by cleaning solvents used by the ground crew the morning of, and once the night before a flight. What seemed innocent to the noses of those in the cabin at sea level pressure became so strong once pressurized, it caused difficulty breathing and noticeable blotches on the skin. We no longer allow any cleaning solvents on the aircraft.



Updated:

2014-07-04



1

Aircraft cabin

- There are problems associated with using common household chemicals in the aircraft cabin, particularly in flight. Although common cleaners may be safe for the home, their use can be detrimental in aircraft. Many problems can occur, such as damage to the aircraft interior, components, or structure, but even more concerning is that using and/or mixing various chemicals can cause toxic fumes. In an enclosed cabin, this can have extremely

one area with a particular cleaner, only to be later inadvertently used with a different cleaner/chemical, but the result can be a dangerous or possibly toxic mixture.

- FAR 25,831 (b) states that "Crew and passenger compartment air must be free from harmful or hazardous concentrations of gases or vapors." In order to comply with this regulation, only safe chemicals should be used aboard the aircraft during flight.
  - Use only Gulfstream-recommended products for cleaning and maintaining the following surfaces: wood, vinyl laminate, plastic, plating, stainless steel, leather, vinyl, fabrics, carpet, and galley equipment such as sinks, ovens, microwaves, coffee units, and toilets.

    Note: Manufacturers of commercial off-the-shelf equipment may not take into consideration that their units could be installed in an aircraft and used at altitude in a pressurized cabin. Therefore, manufacturer-recommended cleaners for this equipment may not be on the approved list for aircraft use.

Source: The Gulfstream Journal, June 27, 2014

If your aircraft manufacturer doesn't include an approved list, the list shown here is for what Gulfstream has approved. Our cabin altitude rarely exceeds 6,000 feet so if we can't use a particular solvent, chances are you shouldn't either.

- Use only clean, white, non-abrasive cotton rag toweling when cleaning fabric, leather, carpet, metal, plated or plastic areas, or any other surfaces.
- or daily cleaning, use a clean, non-abrasive 100% cotton cloth with approved mild cleaners or detergents, followed by a clean, non-abrasive cotton cloth.
- For in-flight use, use nothing stronger than a mild, non-abrasive liquid soap and water.
- Chemicals containing chlorine or ammonia should not be used in flight or stored aboard the aircraft.
- Do not mix ammonia and chlorine bleach. Some simple cleaners such as Windex® and Formula 409® contain ammonia or chlorine, as well as possibly other caustic chemicals. Often many cleaners
- Do not take chemicals such as regular chlorine bleach, ammonia, solvents, or various personal items such as nail polish remover aboard aircraft.

Source: The Gulfstream Journal, June 27, 2014

The old saying, "there is only so much you can do" applies here when it comes to passenger carry on articles. We certainly aren't going to interrogate every passenger for possession of nail polish remover. But, on the other hand, you are handed a case of the stuff for the luggage compartment, you should let the passenger know this stuff can be lethal at cabin altitudes if the containers were to break in flight and atomize into the air. In the Gulfstream the baggage compartment is aft and all air flow moves forward. If the passenger protests you can offer to have it sent FedEx. But I would, under no circumstances, allow a case of nail polish remover or similar solvents on the aircraft. (In the Air Force I was once given a direct order to carry a case of aircraft solvent on a Gulfstream. I refused, the general officer issuing the order went ballistic, the case was left on the tarmac, and nothing was ever said of the incident again. People can overreact at times, but once they figure out you are keeping things safe, they tend to calm down.

- Never use full strength bleach on any carpet or fabric.

aboard the aircraft, or having in luggage.
- To prevent possible damage to the aircraft interior, take care to not spill cleaning products in the aircraft.
- Do not use a beater brush attachment when vacuuming fabric, leather, or any other materials.
- Cleaning and maintenance of delicate fabrics should be done only by a trained professional using approved cleaners.
- Do not allow spills to dry on fabric, carpet, or any other surfaces.
- Do not use abrasives when cleaning plated or finished surfaces, plastics, or mirrors.
- Do not use galley cleaning materials in other sections of the aircraft, unless approved for use in that area.
- Do not intermix lavatory chemicals. Toxic fumes could result.
- If the proper cleaning equipment, supplies, and procedures are not available, leave the cleaning task to a professional.

Source: The Gulfstream Journal, June 27, 2014

2

Avionics displays

- Clean avionics displays only with approved cleaners, tools and Electronic Flight Instrument System (EFIS) X-405 Window Cleaner wipes. Immediately remove all dirt and spills. Do not allow spills to dry. Report stains that cannot be cleaned to maintenance.
- Gently dust weekly with dashboard brush. Dust more frequently if required.
- Gently wipe avionics display with EFIS X-405 Window Cleaner wet wipe.

Source: Gulfstream Aircraft Outfitting Cleaning Manual, ¶1.

3

Carpet

- Clean silk and wool carpet only with approved cleaners, tools and clean, white non-abrasive 100% cotton rag or paper toweling. Immediately remove all dirt and spills. Do not allow spills to dry. Report rips or stains that cannot be cleaned to maintenance.
  CAUTION:
  - TO PREVENT POSSIBLE DAMAGE TO AIRCRAFT INTERIOR, TAKE CARE NOT TO SPILL CLEANING PRODUCTS IN AIRCRAFT.
  - USE ONLY CLEAN, WHITE, NON-ABRASIVE COTTON TOWELING WHEN CLEANING TO AVOID DAMAGE TO THE

- CLEAN CARPET WITH AERO SERVICES CHEMICALS OR APPROVED CLEANING AGENTS ONLY. THESE SOLVENT SPOTTER / CLEANING AGENTS CONTAIN TRICHLOROETHANE. DO NOT USE ANY SOLVENTS SPOTTER / CLEANING AGENTS CONTAINING TRICHLOROETHENE OR MEK. MOST COMMON HOUSEHOLD CLEANERS ARE DESIGNED TO ATTACK PROTEIN. SILK IS 100% PROTEIN. IMPROPER CHEMICAL USAGE MAY SUBSTANTIALLY DAMAGE CARPET.
- DO NOT SUN DRY OR HEAT DRY CARPET. CARPET FIBER IS SUBJECT TO SHRINKAGE.
- SHOULD CARPET REQUIRE DEEP CLEANING, CARPET MUST BE REMOVED FROM AIRCRAFT AND CLEANED WITH COLD WATER OR TREATED WITH DRY CLEANING SOLUTION. ALLOW CARPET TO DRY COMPLETELY BEFORE INSTALLING IN AIRCRAFT.
- WHEN SHAMPOOING WOOL CARPETING, USE LOW / NEUTRAL PH SOAPS AND FOLLOW WITH A RINSE. AVOID USING WATER ABOVE 100°F (37.7°C) OR CARPET MAY SHRINK.
    - PRIOR TO CLEANING CARPET, TEST CARPET CLEANER IN AN INCONSPICUOUS PLACE.

- Gulfstream Aerospace Corporation recommends the following specific products for cleaning and maintaining carpets:
    - Carbonated Water
    - Dend Dextair Ultra
    - Rubber Gloves
    - Small Hand Rake
    - Smoke Relief (Odor Relief)
    - Tamping Brush
    - Vacuum Cleaner
    - White Terry Towels
- Cleaning Technique

  CAUTION: AT NO TIME SHOULD A CARPET BE SHAMPOOED, STEAM CLEANED OR ANY OTHER WET TYPE CLEANING BE PERFORMED WITHIN THE AIRCRAFT TO PREVENT MOLD, MILDEW AND / OR DAMAGE TO THE AIRCRAFT. ALLOW CARPET TO DRY THOROUGHLY BEFORE REINSTALLATION. WHEN SHAMPOOING WOOL CARPETING, USE LOW / NEUTRAL PH SOAPS AND FOLLOW WITH A RINSE. AVOID USING WATER ABOVE 100°F (37.7°C) OR SHRINKAGE MAY OCCUR.

    - Remove carpet from aircraft to an appropriate location.
    - Apply warm water and detergent mixture to carpet using pressurized spray wand.

      NOTE: Read manufacturer instructions to determine proper water / detergent ratio.

    - Extract loosened soil and spray mixture from carpet using suction.

      CAUTION: USE COOL TO WARM AIR ONLY TO DRY CARPET. AIR ABOVE 100°F (37.7°C) MAY CAUSE SHRINKAGE.

    - Dry carpet by circulating air over and under carpet.

      NOTE: Ensure carpet is thoroughly dry before reinstalling in aircraft.

    - Reinstall cleaned carpet back into aircraft.
- Spot Cleaning
    - Remove as much soil as possible by blotting area with clean towel. For grease, oil or petroleum based stains, scrape lightly with fingertips or blot area with clean towel.
    - Spray Aero Services High-Tech Solvent Spotter, Aero Services High-Tech Carpet & Fabric Spot Cleaner or another approved

- Clean soiled area as follows: Use a blotting motion and press firmly to break up and absorb contaminant. Begin with the outermost edge of contaminant and work inward. Repeat until contaminant is completely removed. Tamp area with a tamping brush if necessary to aid in removing dried contaminant. (a) Blot area thoroughly. (b) Dry carpet for 30 minutes. (c) Rake affected area. (d) Vacuum area as soon as possible following drying and raking.
- Protect soiled area as follows: (a) After using any chemical to spot clean carpet, retreat area with Aero Services High-Tech Interior Protectant to ensure uniform stain-guard protection on all areas of carpet. Apply protectant using hand spray bottle with slight misting action. Apply lightly; do not overspray. Allow protectant to dry 12 hours before subjecting area to heavy traffic. No further action is required.

Source: Gulfstream Aircraft Outfitting Cleaning Manual, ¶2.

4

Galley

- Clean galleys only with approved cleaners, tools and clean, white terry towels. Immediately remove all dirt and spills. Do not allow spills to dry. Report scratches or stains that cannot be cleaned to maintenance. Thorough cleaning of the galley is essential after every flight. Especially clean all recessed areas of the galley.
- Clean component parts with white terry towel.
- Clean sink and countertop with 49-Body Shine® (Vision®) using blue microfiber cloth to wipe clean.
- Polish metal surfaces with Buffy Polishing Pad.

Source: Gulfstream Aircraft Outfitting Cleaning Manual, ¶4.

References

(Source material)

14 CFR 25, Title 14: Aeronautics and Space, Airworthiness Standards: Transport Category Airplanes, Federal Aviation Administration, Department of Transportation

Gulfstream Aircraft Outfitting Cleaning Manual, Basic Issue, September 30, 2013

"Use of Cleaning Chemicals in the Aircraft Cabin," The Gulfstream Journal, June 27, 2014

Gulfstream is not responsible or liable for your use of any materials or information obtained from this site.

Always remember that I am just a pilot. I try to give you the facts from the source materials but maybe I got it wrong, maybe I'm out of date. Sure, I warn you when I am giving you my personal techniques, but you should always follow your primary guidance (aircraft manuals, government regulations, etc.) before listening to me.

How to Clean Ceramic Tiles

Keep your ceramic tiles in great condition with this easy guide. Find out how to clean, remove stains, and prevent your ceramic tiles from ageing here.

Updated May 6, 2022

Ceramic tiles look lovely in the kitchen or bathroom, but when it comes to cleaning, they're a little more delicate than other surface materials. To keep stains and general wear and tear under control, and your tiles looking their best – follow our ceramic tile cleaning tips and maintenance advice.

Don't forget – Always read the instructions on a cleaning product before use, and test on a hidden part of the surface first.

Some people will recommend vinegar or similar substances for cleaning ceramic tile, however, these acid-based agents can dull the tiles sheen. To avoid this, use neutral or alkaline agents, such a **Cif Cream Cleaner**, which is powerful at cleaning ceramic but gentler on your tiles.

Cleaning Glazed Ceramic Tiles

Ceramic tiles come in two types: glazed and unglazed. The first has been fired so that a layer of glass forms on top, making it smooth, durable, and all but stain-proof. However, regular, light cleaning is still essential to avoid build up of grime. This holds especially for floors where grit can wear down the shine, and in the shower where long-left soap scum can prove near impossible to remove.

1. First, gently brush or wipe the tiles to remove any grit that may scratch the finish. Vacuum cleaners are usually to be avoided since most attachments can scratch.
2. Mix up a mild solution of non-acidic detergent and water. (Cif is a good example.)
3. Mop the floor with the solution, working out any stubborn areas with a soft cloth if necessary. (A cloth or rag mop is preferable to sponge.)

To clean tile walls, follow the same steps but with a cloth or non-metallic scouring pad instead of a mop.

Cleaning Unglazed Ceramic Tiles

With no protective layer of glass, unglazed tiles are more difficult to clean. First, their porous surface traps grime much better than their glazed counterparts, and they aren't nearly as resistant to stains. Second, the vulnerability of the naked clay limits the strength and type of cleaner that can be used. The answer is to use a strong but neutral-pH cleaner.

Additionally, if you find yourself cleaning ceramic tiles often, consider having them sealed. This will increase the durability and stain-resistance of the tiles, though won't remove the need for regular cleaning altogether. Tiles should also be resealed periodically, around once or twice a year.

If it isn't already, the first thing to do is get your grout sealed. (Tile-layers will often seal tile and grout at once.) Make sure to avoid a silicone seal that extends over the tile surface itself – this can ruin the glossy finish and will often wear off in patches.

If your grout is already dirty, all is not lost – grout staining products are available from most DIY or home maintenance stores, and these can help to restore some of the original color.

- Determine what type of tile you have.
- Select the appropriate cleaning agent and follow the steps above.
- Don't forget to clean the grout!

Do you want to learn which household cleaning tasks cause the most stress? Then read our **Heated Household** data analysis.

Frequently asked questions on how to clean ceramic tiles

How do you clean unglazed terracotta floor tiles?

An untreated terracotta tile is highly porous so you should clean unglazed terracotta floor tiles with care. Sweep them regularly to remove surface dirt. If you do find that there is ground in dirt on your tiles scrub them gently with a soft brush and a small amount of clean water. Never use abrasive cleaners or hard scrubbing brushes as these could cause irreparable damage to your tiles.

How do you clean abrasive ceramic tiles?

The solution for how to clean abrasive tiles is to use 3 cups of baking soda and 1 cup of water. First, mix your ingredients together to make a paste. Apply this to your tiles using a damp toothbrush. Leave for a short while the wipe away with a clean, damp cloth.

There are five key steps for how to clean porous tile floors. First, start by sweeping up loose debris. Next, combine 2 tablespoons of liquid detergent and 1 gallon of warm water and dip a microfiber mop into the solution. Third, wring out excess liquid and mop the floor. Then use clean, warm water to mop away detergent residue and rinse your floor. Finally, use clean cotton towels to dry your tiles.

Originally published October 12, 2018

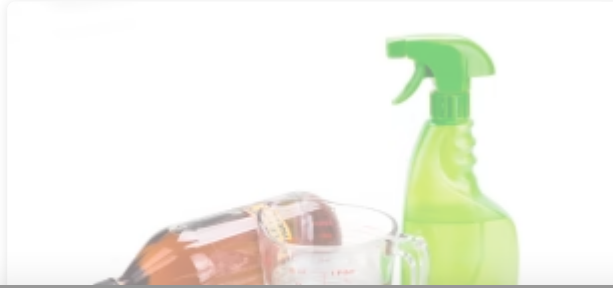
Most read

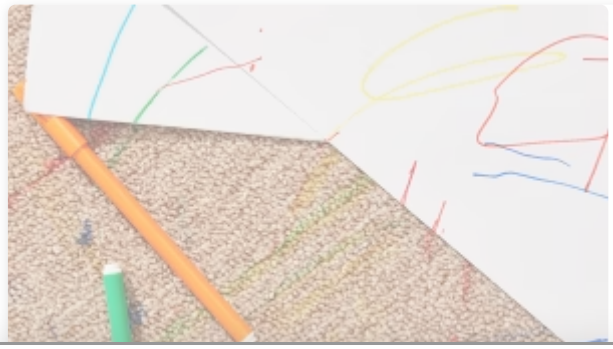
How to remove hard water stain on glass: 4 key techniques

Floor and surface cleaning

Cleaning Tips for Shiny & Spotless Floors

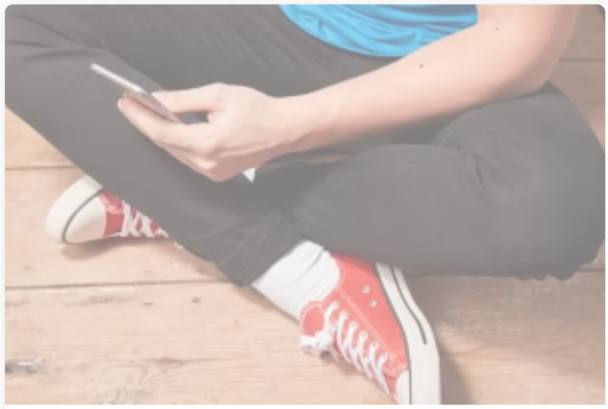
Floor and surface cleaning





How To Clean Tiles

Floor and surface cleaning



Cleaning Wood Floors: A How-To Guide

Floor and surface cleaning

Cleaning Marble: How to Remove Stains from Marble

Floor and surface cleaning

How to remove permanent marker: FAQ

Floor and surface cleaning

Cookies Settings

Co-authored by Raymond Chiu
Last Updated: January 26, 2022 References

Plastic is a man-made substance meant to withstand dirt and hard use. Many things are made of plastic including patio furniture, children's toys, shower curtains, dishes, and storage containers, and they need regular cleaning and disinfecting. Knowing the proper way to clean plastic will help you maintain your home.

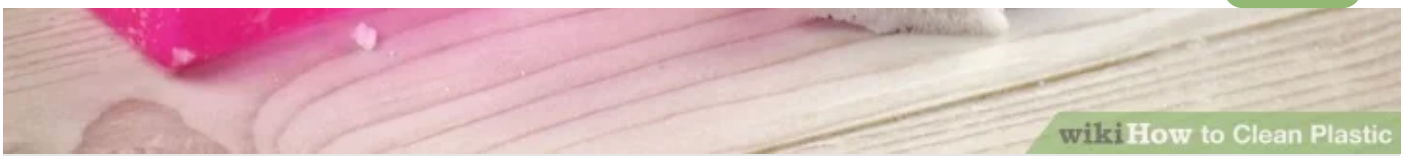
1 Method 1 of 4: Utilizing Baking Soda

1 **Make a paste of baking soda and water.**[1] Make a 3:1 mixture by combini
of baking soda to 1 tablespoon of water. Use a spoon, dull knife or old toothbr
ingredients together until they form a paste.[2]

more baking soda or water. More baking soda will make it thicker, and more water will make it thinner.

2 **Rub the paste onto the plastic.** Use a cloth or an old toothbrush to apply the paste liberally onto the plastic, making sure to scrub any sticky grime.[3]

- You may need to make more paste if you are cleaning a large plastic item.



3 **Let the paste sit on the plastic.** Allow the baking soda paste to sit on the plastic for 20 to 30 minutes. The baking soda will loosen the dirt on the plastic.

4 **Remove the paste with a cloth.** Use a wet washcloth to wipe the baking soda paste off the plastic. Rinse the washcloth periodically as you wipe.

5 **Rinse the plastic.** Remove the remaining paste by rinsing the plastic thoroughly with clean water. This should rinse away any dirt or grime the paste loosened.

- Smaller items can be placed in the sink to be rinsed.
- A large item can be rinsed with a garden hose.

6 **Wash the plastic with soap and water.** Use a mild dish detergent to wash the plastic.

7 **Dry the plastic with a towel, or sit it out to air dry.** In addition to being clean, this should also help to remove remove plastic smell from the item.

2 Method 2 of 4:

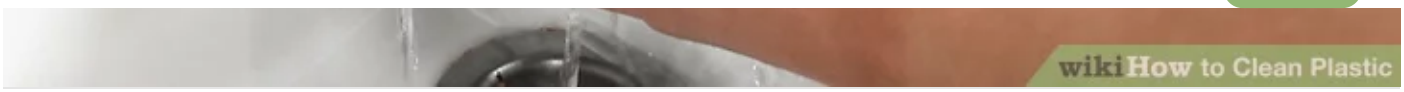
Using Vinegar

1 **Combine vinegar and water.**[4] Mix one part vinegar with one part water in a clean, empty spray bottle. For example, 1 cup of vinegar and 1 cup of water will make a 16 ounce solution.[5]

2 **Spray the solution on the plastic.** Liberally spray the plastic with the vinegar solution completely soaking the plastic. Vinegar is good at removing grease, mildew, and hard water stains as well as disinfecting hard surfaces.[6]

3 **Wipe the plastic.** Use a clean cloth or sponge to wipe the vinegar solutions around the plastic.

- Spray more vinegar solution on areas with built up grime, and scrub them liberally until the dirt is removed.



4 **Rinse with water.** Use clean water to rinse the vinegar solution from the plastic; dry it with a towel.

EXPERT TIP

BRIDGETT PRICE
House Cleaning Professional

Expert Trick: If you want to remove unpleasant scents, try using lemon or orange for an all-natural scent. After you wash your plastic, put a little lemon zest or orange zest inside and seal the lid, then let it sit for 10-15 minutes. When you wash it out, any nasty scent will be gone.

3 Method 3 of 4:
Cleaning with Bleach

1 **Make a bleach solution.** Add 1 tablespoon bleach to each cup of water you have. You can make the solution in a sink, a container, or a bathtub.[7]

- Use caution when mixing bleach to avoid splashing it onto clothes or bare skin

2 **Soak the plastic.** Submerge the plastic in the bleach and water solution for 5 to 10 minutes. Make sure the plastic is completely covered in the solution.[8]

- Use gloves when you submerge the plastic to avoid injury.

3 **Scrub the plastic with a sponge or cloth.** Remove any caked on dirt or grime by rubbing the item with a sponge.

4 **Rinse and dry the plastic.** Thoroughly rinse the plastic with water to remove the bleach solution. Air dry the plastic by letting it sit out for about 30 minutes or until completely dry.[9]

4 Method 4 of 4:

Washing in the Dishwasher

1 **Load the plastic in dishwasher.** Place your plastic item in the dishwasher m secure. Smaller items should be placed in the top rack of the dishwasher, whil need to be in the bottom.[10]

- Place really small items, like plastic building blocks, in a mesh bag or small dis before placing on the top rack.

2 **Add dishwashing detergent.** Put the appropriate amount of dishwashing detergent into the soap compartment of your dishwasher.

- Check your dishwasher's manual to find out where the compartment is, how much detergent to use, and what kind of detergent to use.

3 **Turn on the dishwasher.** Set your dishwasher settings to normal wash, and c
heat dry option. The chemicals in plastics can break down in high heat, so it's
them air dry.

4 **Air dry the plastic.** Remove the item from the dishwasher when it has finished washing. Place the plastic on the counter or in a drying rack to dry. It may take several hours for the plastic to dry completely.

Community Q&A

Search
Type your query here
Add New Question

- Question
  How do I clean dry salt off of plastic?
  Community Answer
  You should be able to just take a mild soap and water mixture. If it's really stuck on there, use a soft bristle brush that's coarser than a toothbrush but not as coarse as a barbecue brush, as those will scratch most plastics.
  Yes No
  Not Helpful 3 Helpful 6
- Question
  How do I clean the inside of a plastic medicine dropper?

Community Answer

Pour some warm water into a bowl or small cup, and place the medicine dropper inside. Leave it in the bowl/cup for 2 or more hours.

Yes No

Not Helpful 8 Helpful 6

- Question

  What can I use to clean clear plastic mustard bottles?

Community Answer

Hot water and dish detergent. Shake real well and let sit a few minutes. Empty solution and rinse with cold water. Place in a dish drain until dripped dry.

Yes No

Not Helpful 1 Helpful 3

See more answers

Ask a Question

What is your question?

200 characters left

Email address (optional)

Include your email address to get a message when this question is answered.

Submit

Tips

- To make your vinegar solution smell better add a few drops of an essential oil like lavender or citrus.

  Helpful 0 Not Helpful 0

- Some methods are better at cleaning certain things than others, so choose which one fits what you need to clean. Baking soda is good at removing old odors and loosening stuck on grime, bleach is best for disinfecting and whitening, vinegar is great for grease stains, and the dishwasher is good for smaller plastic items.

  Helpful 0 Not Helpful 0

- If one method doesn't completely clean your plastic, try another one.

  Helpful 0 Not Helpful 0

Warnings

- Bleach may discolor any plastics that aren't white.

  Helpful 6 Not Helpful 1

- Check the recycling number on your plastic before putting it in the dishwasher. Some plastics shouldn't be washed in the dishwasher because their chemicals may break down. Plastics with the numbers 1,2, and 4 are generally considered safe. Plastics you eat or drink from are best washed by hand.

  Helpful 8 Not Helpful 5

- Use gloves when mixing and cleaning with solutions, especially bleach.

  Helpful 3 Not Helpful 4

Things You'll Need

- [ ] Cloths
- [ ] Water
- [ ] Buckets
- [ ] Gloves
- [ ] Container
- [ ] Spray Bottle
- [ ] Baking soda
- [ ] Bleach
- [ ] Vinegar
- [ ] Dishwasher
- [ ] Dish detergent

How to
Use a Dishwasher

How to
Clean Car Plastic

How to
Clean Sticky Plastic

How to
Clean Tomato Stains from Plastic

How to
Remove Ink from Plastic

Get al
Sign
Ema

How to
Get Glue Off of Plastic

How to
Fix Faded Plastic

How to
Clean Foggy Plastic

Get al
Sign
Ema

How to

Clean Clear Plastic

How to

Fix Smelly Plastic Containers

How to
Clean Bakelite

How to
Clean Artificial Flowers

How to
Clean Turmeric Stains from Plastic

Get al
Sign
Ema

How to
Clean Plastic Containers

References

1. ↑ Raymond Chiu. House Cleaning Professional. Expert Interview. 21 October 2019.
2. ↑ http://foodal.com/knowledge/cleaning/11-ways-remove-stains-plastic/
3. ↑ http://www.keter.com/tips-and-articles/clean-plastic
4. ↑ Raymond Chiu. House Cleaning Professional. Expert Interview. 21 October 2019.
5. ↑ http://organizedhome.com/clean-house/pantry-recipes-homemade-cleaning-products
6. ↑ http://www.goodgirlgonegreen.com/7-diy-cleaning-recipes-using-vinegar/
7. ↑ http://www.goodhousekeeping.com/home/cleaning/tips/a19487/how-to-clean-plastic-containers/
8. ↑ https://www.clorox.com/cleaning-and-laundry-tips/cleaning/nursery/how-to-clean-baby-toys/
9. ↑ http://www.popsugar.com/fitness/How-Disinfect-Reusable-Water-Bottles-18674061

More References (1)

About This Article

Co-authored by:
Raymond Chiu
House Cleaning Professional

This article was co-authored by Raymond Chiu. Raymond Chiu is the Director of Operations for MaidSailors.com, a residential and commercial cleaning service based in New York City that provides home and office cleaning services at affordable prices. He has a Bachelors in Business Administration and Management from Baruch College. This article has been viewed 286,618 times.

29 votes - 75%
Co-authors: 14
Updated: January 26, 2022
Views: 286,618
Categories: Cleaning Plastic

In other languages:

Español: limpiar plástico
Français: laver un objet en pla
Italiano: Pulire la Plastica

Plastik

Thanks to all authors for creating a page that has been read 286,618 times.

Reader Success Stories

Rampur Viswanath
Apr 28, 2020

"Thank you for providing several options for cleaning plastic, I tried vinegar solution but it did not clean dark..." more

More reader stories

Share your story

Did this article help you?

Yes No

wiki

Categories » Home and Garden » Housekeeping » Cleaning » Cleaning Plastic

How to Clean Plastic

CLEANING AND DISINFECTING FOR COVID-19

September 21st, 2020 | Insurance & Safety News

Both cleaning and disinfecting are important for reducing the spread of viral illnesses. Some viruses may remain viable (living) for hours to days on surfaces.
Cleaning refers to the removal of germs, dirt, and impurities from surfaces. Cleaning does not kill germs, but by cleaning first with soap and water or your usual cleaner, it will lower their numbers and the risk of spreading infection. Disinfecting refers to using chemicals to kill germs on surfaces. Disinfecting does not necessarily clean dirty surfaces or remove germs, but by killing germs that remain on a surface after cleaning, disinfecting can further lower the risk of spreading infection.

Before you begin ask yourself: "Do I need to disinfect, and is it necessary?" Disinfectants are widely misused and overused, including improper concentrations and solutions. More is not necessarily better-often, cleaning is all that is needed. Try using a fragrance-free soap/detergent and water or an all-purpose cleaner with Safer Choice, Green Seal, Ecologo or Design for the

Environment (DfE) labels on the product. These labels are on environmentally preferable cleaning products and disinfectants that have a lesser or reduced effect on human health and the environment.

If you determine disinfection is necessary, use products registered by the U.S. Environmental Protection Agency (EPA) List N Disinfectants for Use Against SARS CoV-2, the virus that causes COVID-19 at the EPA website.

You can also look for products containing safer active ingredients such as ethanol, isopropanol (isopropyl alcohol), hydrogen peroxide, L-Lactic acid, and citric acid. Avoid sodium hypochlorite (bleach) and quaternary ammonium compounds, if possible; these ingredients can cause asthma.

Establish a specific, detailed list of items, surfaces, equipment, and locations to be cleaned and disinfected, and a schedule of how often that should occur. Identify "high-touch" areas that require frequent treatment. These include workstations, counter tops, light switches, railings, doorknobs, and equipment such as printers and copy machines. Also identify any other areas that should be frequently cleaned such as bathrooms.

Many chemical disinfectants can be harmful to workers if they are unsafely handled and/or improperly used. Therefore, it is important that disinfectants are selected and used properly to ensure effective disinfection and avoid harm to individuals and damage to surfaces. Proper use of disinfectants should include:

- Selecting the appropriate disinfectant based on the type of surface to be disinfected (e.g., hard surface, soft surface, electronics, fabric, etc.)
- Providing employee training on the potential health hazards of the cleaning and disinfection chemicals used
- Following manufacturers' instructions and product label directions for safe, effective use

Browse Categories

- Awards and Accolades
- Business and Finance News
- Childcare/Family Services News
- Communications News
- Community Partnerships
- District Spotlight
- Early Learning News
- ESD Leadership News
- Insurance & Safety News
- Prevention & Youth Services News
- Professional Development News
- Program Spotlight
- Specialized Services News
- Staff Spotlight

- Wearing personal protective equipment (such as gloves and eyewear) appropriate for the chemicals being used
- Using the proper concentration and application method
- Making sure to follow the required contact time (i.e., the amount of time the surface should be visibly wet) following application
- Storing and using disinfectants in an appropriate manner according to the label. Ensure that ALL containers used to measure, store, transport, mix, and apply cleaning agents and disinfectants are properly labeled as to the contents, product name, and concentration if diluted. For example, all spray application bottles must be properly labeled with the product name and end use concentration
- Keeping all disinfectants out of the reach of children
- NEVER mix disinfectants with cleaners, other disinfectants, or other chemicals
    - Mixing some chemical disinfectants with other chemical substances could be hazardous. For example, the toxic gas chlorine can be released if you mix sodium hypochlorite (bleaching solutions) and acidic cleaning agents.
    - Mixing a disinfectant with anything else could change its properties and it may no longer be effective.

Do not forget to evaluate the plan. Get feedback from people using the products and from those in the spaces where they are used and adjust your procedures as need. For more information and resources contact your ESD 112 Loss Control staff.

GET SOCIAL AND SHARE THIS WITH YOUR NETWORK

- State & National News
- STEM News
- Student & School Success News
- Videos

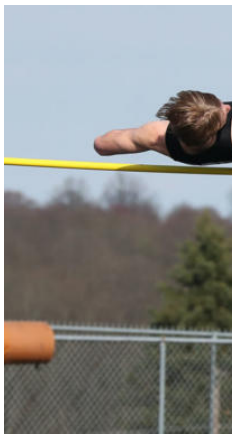
Latest News

- LANXESS Invests in Southwest Washington Student Internships Organized by Career Connect Southwest
- OpenSciEd Summer Institute Brings Together Teachers from Across Washington State to Learn About New Science Curriculum
- Washington State School for the Blind's Superintendent

RELATED POSTS

The foundation of a safe workplace

February 15th, 2022



Stay on track

February 1st, 2022

and Associate Director of Transition and Residential Programs Awarded Top Honors by National Federation of the Blind

› Centerville's Karie Rolfe Named 2022 Regional Classified School Employee of the Year by ESD 112

share with us!
YOUR NEWS

Submit your story to the ESD 112 Newsroom.

opportunities for learning communities through innovative partnerships, responsive leadership, and exceptional programs.

Call: (360) 750-7500
E-mail: hr.dept@esd112.org

ESD 112 acknowledges and honors the traditional lands of the Cowlitz and Chinook Tribes, Lower Columbia Peoples, Shoalwater Bay Tribe and the Confederated Tribes and Bands of the Yakama Nation, on which our school districts reside in what is now Southwest Washington. We pay respect to the elders and caretakers that have stewarded these lands throughout generations and that are still here today.

Cleaning and waste disposal procedures - infection control

On this page

Key messages

- Thorough cleaning is important for infection control – particularly in work areas – because deposits of dust, soil and microbes on surfaces can transmit infection.
- Healthcare and other care facilities should follow general cleaning procedures.
- Some facilities require specialised cleaning procedures.
- Waste disposal is also important for infection control. Different types of waste – general, clinical and pharmaceutical – have different waste management procedures that need to be followed.

Cleaning – general procedures

Cleaning is important for infection control – particularly in work areas – because deposits of dust, soil and microbes on surfaces can transmit infection. Contaminated areas such as operating rooms or isolation rooms must be cleaned after each session, and spot cleaned after each case or thoroughly cleaned as necessary.

The following basic principles should be followed:

- written cleaning protocols should be prepared, including methods and frequency of cleaning; protocols should include policies for the supply of all

cleaning and disinfectant products
- standard precautions (including wearing of personal protective equipment [PPE], as applicable) should be implemented when cleaning surfaces and facilities (see 'Standard and additional precautions')
- cleaning methods should avoid generation of aerosols
- all cleaning items should be changed after each use and cleaned and dried before being used again. They should also be changed immediately following the cleaning of blood or body fluid/substance spills. Single-use cleaning items are preferred, where possible, such as lint-free cleaning cloths
- sprays should not be used, because they can become contaminated and are difficult to clean. Sprays are not effective, as they do not touch all parts of the surface to be cleaned
- detergents should not be mixed with other chemicals
- all cleaning solutions should be prepared fresh before use.

Cleaning – specific procedures

Surface cleaning

Floors in hospitals and day-care facilities should be cleaned daily or, as necessary, with a vacuum cleaner fitted with a particulate-retaining filter. The filter should be changed in accordance with the manufacturer's instructions.

The exhaust air should be directed away from the floor to avoid dust dispersal.

A ducted vacuum cleaning system can also be used, as long as safe venting of the exhaust air is ensured.

Damp dusting using a lint-free cloth is essential. Brooms disperse dust and bacteria into the air, and should not be used in patient or clinical areas. Dust-retaining mops, which are specially treated or manufactured to attract and retain dust particles, do not increase airborne counts as much as ordinary brooms and remove more dust from surfaces. However, brooms and dust-retaining mops should not be used in clinical areas where there is a high risk of infection associated with dust (for example, burns units).

The procedure for routine surface cleaning is as follows:

- All cleaning solutions should be prepared immediately before use.
- Work surfaces should be cleaned (wiped over) with a neutral detergent and warm water solution, rinsed and dried before and after each session, or when visibly soiled. Spills should be cleaned up as soon as practical.
- When a disinfectant is required for surface cleaning, the manufacturer's recommendations for use, and workplace health and safety instructions

should be followed.
- Buckets should be emptied after use, washed with detergent and warm water, rinsed in hot water and stored dry (turned upside down).
- Mops should be laundered or cleaned in detergent and warm water, rinsed in hot water, then stored dry. Mop heads should be detachable or stored with the mop head up.

Specialised areas

Isolation rooms and ensuite bathrooms should be cleaned at least twice daily, depending on the type of microorganism.

Operating rooms and day procedure rooms, including endoscopy rooms, should be cleaned after each operating session and when visibly soiled. Thorough cleaning of the operating suite should be performed daily in addition to the cleaning performed after each operating session.

Obstetric areas, particularly delivery suites, should be cleaned after each delivery, when visibly soiled and at least daily.

Oncology areas should be cleaned twice daily.

Sterilising processing departments should be cleaned at least twice daily and when visibly soiled.

Wet areas

The following should be cleaned at least daily and more frequently as required:

- toilets, sinks, washbasins, baths and shower cubicles
- all fittings attached to showers, baths and handbasins
- surrounding floor and wall areas.

Walls and fittings

Walls and screens should be cleaned quarterly or if visibly soiled.

Blinds and curtains should be cleaned quarterly or if visibly soiled.

Carpets should be vacuumed daily and other floor surfaces washed daily and when soiled.

Bed and examination screens should be changed weekly and when visibly soiled.

Cleaning Creutzfeldt-Jakob disease infectious agents

Spills of central nervous system tissue or cerebrospinal fluid should be absorbed with paper towels and disposed of by incineration. The surface should then be soaked with one molar sodium hydroxide or 2.0–2.5 per cent sodium hypochlorite, left for 1 hour and cleaned again with paper towels that are disposed of by incineration.

Cleaning other infectious disease agents

Spills of blood or other body fluids and tissues should be cleaned using standard spills management procedures. PPE used when cleaning contaminated surfaces should be incinerated after use. Reusable eye protection should be cleaned as above.

Maintenance of cleaning equipment

Cleaning items (including solutions, water, buckets, cleaning cloths and mop heads) should be changed after each use. They should also be changed immediately following the cleaning of blood or body substance spills.

These items should be washed in detergent and warm water, rinsed and stored dry between uses. Mops with detachable heads should be laundered between uses.

Spills of laboratory cultures of human pathogens

Spills of laboratory cultures should be absorbed with paper towels and disposed of as clinical waste. The contaminated surfaces should be treated with 2.0–2.5 per cent sodium hypochlorite, left for 1 hour and cleaned again with paper towels that are disposed of as clinical waste.

Laboratories should also refer to *AS/NZS 2243.3:2002: Safety in laboratories – microbiological aspects and containment facilities*.

Waste disposal

All healthcare facilities should have policies and procedures in place for the correct management of all waste generated. The Environmental Protection Authority (EPA) has clear guidelines on how waste should be managed. The National Health and Medical Research Council (NHMRC) also has guidelines on the management of waste generated in healthcare facilities.

Waste is classified into three main groups of waste:

- general
- clinical
- pharmaceutical.

All waste should be stored in secure areas until collected. Waste disposal companies licensed with the EPA will collect all clinical and pharmaceutical waste for disposal in specialised waste disposal facilities, which are also licensed by the EPA.

Waste should be removed from clinical areas at least three times each day and more frequently as needed, such as from specialised areas. Waste bags should be tied before removing from the area.

General waste disposal

Place in general waste bin for removal.

Clinical waste disposal

Place in biohazard bags as soon as possible. Biohazard bags have a biohazard symbol and are currently coloured yellow.

Single-use sharps should be placed (by the user) into a sharps container that meets the Australian and New Zealand Standards AS 4031:1992 and AS/NZS 4261:1994.

Pharmaceutical waste disposal

When uncertain about how to dispose of leftover pharmaceuticals, they should be returned to pharmacy for correct disposal.

Most disinfectants can be disposed of through the sewer system by running cold water into the sink before pouring the disinfectant into the sink. Leaving the cold water running for a few moments after the disinfectant has been disposed of dilutes the disinfectant.

Reviewed 24 October 2021

Contact details

Do not email patient notifications.

Communicable Disease Section
Department of Health
GPO Box 4057, Melbourne, VIC 3000

50 Lonsdale Street, Melbourne, VIC 3000 <https://www.google.com.au/maps?q=50%20Lonsdale%20Street,%20%20Melbourne,%20VIC%203000>

Phone 1300 651 160

Fax 1300 651 170

infectious.diseases@dhhs.vic.gov.au <mailto:infectious.diseases@dhhs.vic.gov.au>

Notification procedures <https://www.health.vic.gov.au/infectious-diseases/notifications-procedures-for-infectious-diseases>

How To Clean Your Own Carpets

7 Steps To Cleaning Your Own Carpets

It is important to keep your carpet clean at all times. A clean carpet makes your house look neat and habitable. A frequently cleaned is free from disease-causing germs. To maintain your carpet, you need a know how to clean them well. The follow article will outline the key steps for cleaning your own carpets at home.

Carpet cleaning techniques

Steam carpet cleaning machine resembles a vacuum cleaner. It cleans by projecting a spray of very hot vaporized water on the carpet's surface. Heats in the vapor disintegrate stubborn stains and dirt from the carpet's fabric, leaving it clean and sparkling. The reason why you should consider using a steam cleaner to clean your carpet is that the water vapor generated penetrates deep into the carpet's fabrics where other cleaning agents don't reach. The vapor is also able to eliminate disease-causing germs without the use of chemicals. The following cues will guide you on how to get the best steam cleaner for your carpet;

> Consider buying a multi-purpose cleaner.

> Some steam cleaners use detergent while others don't. If you don't want to incur extra cost brought about by the periodical purchase of detergent, then you should consider buying the device that doesn't use detergent at all.

> The device should jet out the vapor with sufficient force

> Consider versatility of the cleaner. It is advisable to purchase a steam cleaner that can work on different surfaces.

> Familiarize yourself with how a gadget works before buying. Otherwise, you might end up buying a pricey device that does not suit your needs.

You can also eliminate recent stains on your carpet by using **the spray bottle with warm water**. This method, however, is not effective when the stains are widespread all over the carpet.

Carpet stain removal solutions are essential stain removers whose purpose is to get rid of stubborn stains on the carpet. It is often carried out as a pre-treatment process before embarking on a more effective general cleaning exercise such as steam cleaning. It is challenging to select the most effective stain remover in the shop.

In this age of environmental conservation, people are encouraged to purchase eco-friendly stain removers. You can normally find the ones below in yur kitchen or laundry cupboard.

The hydrogen peroxide trick – hydrogen peroxide has over 30 cleaning properties including stain removal from fabrics of almost any type. The chemical is entirely environmentally friendly.

Lemon juice – Citric acid found in lemon juice is a formidable stain remover that can clear most stains on your carpet.

White vinegar – Vinegar is a mild form of acetic acid. It can remove some of the toughest stains including burn marks, dried juices, and grease.

Baking soda – A paste of baking soda, water, and a brush can be used to clean your carpet without having to buy the often expensive environmentally unsafe chemicals in the store.

Clean cloth and brush can be used to perform preliminary cleaning before carrying out actual cleaning with other effective methods such as steam cleaning. Water is sprayed with the cleaning solution bare sprayed on the brush before scrubbing the carpet, from the center to the edges of the carpet. The cloth is soaked in clean water and rinsed before using it to wipe the areas cleaned by the brush.

Steps to follow while cleaning your carpet

Here are the 7 easy to follow steps for DIY carpet cleaning.

Step 1: Moving the furniture

It is difficult to clean the carpet when part of it is under the table. Remove furniture and other households overlying the carpet to you want to clean.

Step 2: Vacuum the room.

Vacuuming the room shortly before embarking on carpet cleaning exercise is essential to remove debris and loose dirt such as hair, dust and soil particles. Loose dirt may fall down from the rest of the room to the carpet if you choose to vacuum the carpet only. Vacuuming the whole room is therefore, advisable.

Step 3: Pre-treatment

This involves undertaking preliminary and less effective cleaning procedures such as water and bottle spray. This step serves to eliminate less stubborn stains.

Step 4: Read the machine instructions

It is important to read the user manual of the cleaning machine you intent to you use. Machines tend to have different cleaning settings for different surfaces. Ensure you adjust the machine into the correct carpet cleaning mode.

Step 5: Start the cleaning process

Begin the cleaning in one corner of the room then move across the room in straight lines. You should stop and often move back for thorough cleaning. Ensure the entire carpet is clean before allowing it to dry. Repeat the process in other rooms.

Step 6: Dry the carpet

Allow air in the room by turning on the fans and opening the door. Carpets dry faster when air blows on them. Let them dry for two hours.

Step 7: Disengaging the machine

Empty the water tank before storing the machine. It is important to rinse the tank after every cleaning exercise.

Conclusion

Carpet cleaning is no longer a tough job as it used to be. Machines do the hard part of the job. Regardless of the method you choose to clean your carpet, always consider environment conservation.

The **How To Clean Your Own Carpets** article was published by **Mark Sanderson** from Pro Carpet Cleaning Brisbane. If you liked this article please follow us on Google+.

By Mark Sanderson | June 7th, 2017 | Carpet Cleaning | Comments Off on How To Clean Your Own Carpets

Share This Story, Choose Your Platform!

About the Author: Mark Sanderson

Comments are closed.

OUR COMPANY

We are a group of highly skilled and dedicated professionals who put commitment to customer satisfaction at our forefront. We provide services to both domestic home owners we well as commercial, industrial and government properties. If you are looking for a reliable and affordable carpet cleaner then consider us for your next job.

You can request a quote or make a booking using our quote form or simply call our office direct..

Thank you for visiting us and we hope to see you soon!

CONTACT US

Get in touch with our friendly team to request a free quote and book your job.

Pro Carpet Cleaning Brisbane

Address: 40 Wyandra St, Newstead QLD 4006

Phone: 07 3555 7944

RECENT POSTS

Ultimate Guide To High-Pressure Cleaning

How Much Does Pest Control Cost? (For Homeowners)

Which Carpet Cleaning Method Should You Choose?

How To Clean Your Own Carpets

The Best Carpet Stain Removal Tips

Keeping it in Tip Top Condition: 5 Crucial Cleaning Equipment Maintenance Tips

Equipment maintenance and care reduces costs and ensures that the machines are ready whenever they leave the storage room.

A few extra minutes every day is all it takes to protect most cleaning machines. It is worth the effort because clean and serviced equipment will be more efficient and produce better results. Here are five tips that any team can use to protect their machines.

1. Empty, rinse and dry any machines that use water

Wet vacuums, floor scrubbers and other similar pieces of equipment are at risk of bacteria, mold and mildew growth if they

stay dirty and wet all the time. Not only will the machine smell bad, but the pathogens it harbors can spread when the equipment is in use. Clean filters and leave lids open to allow them to air dry. Remove and rinse any tanks, sponges, and hoses.

Remove any wet soil from hoses or anywhere in or on the equipment. Once the dirt is dry it will harden and become difficult to remove. It can also cause clogs in the machine that reduce water flow or that prevent air circulation.

2. Keep floor buffers ready for use

Wipe all buffers down completely after every use. Keep the squeegees or brushes immaculate to prevent streaks or scuffs on the floors when the machine is in use. Replace or clean the pads or clean the cylinders (depending on the style of the machine) regularly. Lubricate the handle assembly to keep it working smoothly.

3. Protect dry vacuums from building odours and overheating

Always inspect the rollers and pads on dry vacuums after use to remove any debris. Rollers can stop working if lint, hair or other materials collected. Rinse or replace filters often to ensure air circulation. Empty canisters after every use and change paper vacuum bags if the machine will be unused for a day or more. The debris collected can begin to smell when it sits in the machine and the stink will spread once the vacuum is in use again.

Do not overfill the vacuum because doing so will compromise the effectiveness of the machine and can cause the motor to overheat. Never vacuum anything wet with a dry vacuum because it may damage the machine or electrocute the operator. Always know what the appliance can handle and what it cannot.

4. Frequently inspect the components on all machines

Visually inspect power cords and plugs before the machine goes into use. Do not use any cleaning equipment with a damaged power cord. Have electric cords replaced as soon as they show signs of wear or obvious damage?

Keep all batteries safe. Test, clean and charge batteries as needed. Allow the battery to run dry occasionally, but do not do this more than once a month. Batteries that go dry repeatedly will usually have a shorter life than others. Know how to safely store and care for all battery types.

5. Know when to work and when to stop

Do not allow dirt and grime to build up. It is possible that equipment can overheat or perform poorly if it stays idle for too long before the operator forces it into a marathon cleaning session. Sitting idle drains batteries and causes oiled parts to become dry. Stop using any machine that does not seem to run correctly. Continue operation makes a minor problem much worse, and a simple floor scrubber repair will cost much less than replacing the machine.

Daily maintenance and care help to extend the life of cleaning equipment. All operators of these tools should understand how they work, know when something has gone wrong and know how to store the equipment. Make cleaning equipment maintenance a priority for your cleaning team to help avoid unnecessary costs.

Effective and Efficient Cleaning Products Equipment and Tools

Cleaning sounds like it's too much work. That's how it seems when you don't have the right cleaning products, equipment and tools. These things are meant to be your helpers when it comes to doing the most important job in any establishments: maintaining the cleanliness. Workers can't concentrate on their tasks if the place reeks of bad smell or is infested with bugs and insects.

Keeping areas clean at all times require not only the strength of the cleaners but also the effectivity of the cleaning products, equipment and tools used.

Here at Cleaners Supermarket, we regard cleanliness as a top priority because we know our clients do as well. That is why we provide only the best janitorial cleaning tools for many different uses. Our food grade tools and products range from brushes, buckets for general purpose, floor and wall scrubbing, dusters, gutter tongs and spray can holder, light bulb changers, handles, maids carry trays, tool holders, and extension ladders. With all these products present and ready to serve, surely you have found what you're looking for.

We also have a wide selection of cleaning supplies from trusted brand names like Oates, Sabco and Vileda that provide only the top quality cleaning services and bestselling mops, brooms, buckets, bins, gloves, and squeegees for all your cleaning needs. Truly, having the right supplies and equipment can make all the difference in cleaning. With our efficient and effective cleaning solutions, you can help keep your home, workplace, warehouse, or any types of establishments spotless clean, polished, and germ-free.

Buy your cleaning products here, if there is a cleaning tool you require but is not listed here, please call our friendly staff member who will be happy to track down your request.

Applicators - Polish - Sealers | Brooms | Brushes

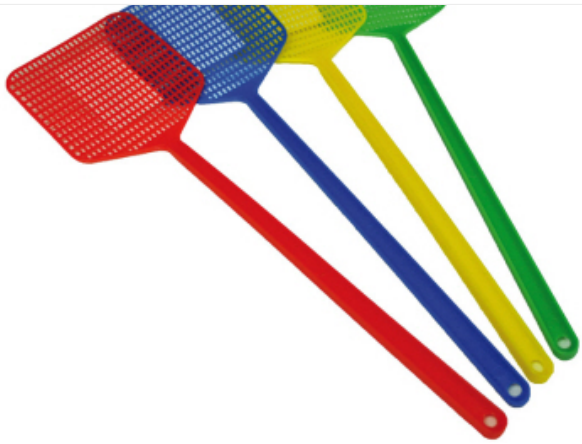
Carpet Sweepers	Cobweb Removal	Doodle Bugs I Eager Beaver I Utility Pads I Power Pads
Dust Pan & Lobby Sets & Doggy Clean up Pans	Floor Scrubbing Tools	Food Grade Equipment
Handles - Mops and Brooms	Mopping - Dust and Drying	Mopping - Wet
Nippers & Rubbish Picking up tools	Smokers Disposal	Spray Paint Aerosols
Tool Holders	Toilet Plungers	Wall Washing

From A$ 97.60

Oates Duraclean Mark II Mop Bucket

Best seller Duraclean Mark II Plastic Roller Wringer Bucket 15 Litre from Oates. Ergonomically designed. Lightweight - unlike metal buckets.

More details



Blat Fly Swat

100mm x 6mm x 390mm long handle.

More details

ED10671

1 Add to cart

air freshener dispenser, sealer applicators,rubbish bins, waste bins, large industrial bins, tidy bins, brooms, pure hair brooms, outdoor brooms, handles, wooden handles, aluminum handles, buckets, mop buckets, window cleaning buckets, brushes, Bannister, flue, bottle brush, bricklayer brushes, dairy scrub, deck scrub, grout brush, kitchen brush, lint roller, nail brush, shoe

brush, spirit brush, scrubbing brush, wire brush, toilet brush, toilet set, dust pans, duster, lambswool duster, feather duster, mops, mop heads, carpet bonnets, nippers, rubbish picking up tools, wall washers, wall washing, warning sign, safety signs, wet floor sign, tool holders, Freedom spray Mop,

Cleaning Supplies

FILTER

Mops and Brushes >

Mop Buckets and Wringers >

Dustpan and Brushes >

Cloths, Wipes and Sponges >

Paper Towels and Dispensers >

Cleaning Trolleys >

Spray Bottles and Dispensers >

Grill and Griddle Cleaners >

Squeegees and Scrapers >

Janitoral and Hand Wash Sinks >

Rubber Gloves >

These commercial cleaning supplies have every area of your business covered. From the smallest cloths for wiping up tabletop spills to the largest heavy-duty mops for cleaning floors, this cleaning equipment is designed for speed and efficiency when used alongside your **cleaning chemicals** collection.

Professional cleaning tools and equipment take all the effort out of tough tasks, delivering sparkling results. You'll also find a huge range of cleaning supplies in a choice of green, yellow, red, blue or white colours - these can be used as part of a **colour coded cleaning** system that significantly reduces the risk of cross contamination.

Shop by Colour: **Green** | **Blue** | **Red** | **Yellow** | **White**

Related products

Jantex Colour Coded Spray Bottles Yellow 750ml

$2.90 ex GST

Jantex

Shop now

Jantex Centrefeed Blue Roll Paper Towels (Pack of 6)

$34.90 ex GST

Jantex

Shop now

Jantex Stainless Steel Jumbo Roll Tissue Dispenser

Reduced Price

$34.90 ex GST

~~**WAS $64.90**~~

J

Shop now

Guidance on aircraft cleaning and disinfection

in relation to the COVID-19 pandemic

Issue no.:	02
Date:	30.6.2020
Author / FS2 Focal point:	Cristian Ionuț Panait, Medical Expert (FS3.1)

Table of contents

Revision record

Issue	Date of issue	Summary of changes
01	20/03/2020	Initial issue
02	30/06/2020	Changes include editorial and formatting changes, alignment with the EASA-ECDC Aviation Health Safety Protocol and the EASA SDs 2020-03 and 2020-04, as well as with other recent publications from ECDC, ICAO, aircraft manufacturers and other stakeholders.

1. Background

1.1 In December 2019, the outbreak of a new type of coronavirus was identified in the province of Hubei, China. Since then, the evolution of the outbreak has been very rapid, affecting most of countries worldwide. Consequently, on 30 January 2020 the outbreak was declared by the World Health Organization (WHO) as a public health emergency of international concern (PHEIC) and on 11 March 2020, further characterised as a pandemic. In mid-February 2020, a cluster began to develop in Europe, which evolved to a pan-European outbreak. In most European States, the outbreak reached its peak in mid-/late-April 2020 and it has been going downwards since then. Nevertheless, new clusters have developed globally in most areas of the world that are currently in various stages of evolution of the outbreak. Furthermore, a considerably high number of newly confirmed cases has been recorded every day in the past weeks.

1.2 In this context, EASA has developed, issued and updated a safety information bulletin (SIB) EASA SIB 2020-02 to provide European stakeholders with operational recommendations in accordance with the official communications of the WHO and the European Centre for Disease Prevention and Control (ECDC), as well as to facilitate access to guidance developed by other stakeholders (e.g. International Air Transport Association (IATA), Airport Council International (ACI) Group, EU Healthy Gateways (Joint Action Preparedness and Action at Points of Entry (Ports, Airports, Ground Crossings)), etc.).

1.3 Furthermore, on 13 March 2020, EASA issued two safety directives (SD), one for the EASA Member States and one for third-country operators performing commercial air transport of passengers into, within or outside the territories that are subject to the provisions of the Treaty on the Functioning of the European Union. The SDs mandate the disinfection of aircraft after each flight arriving from high-risk areas in order to protect passengers against secondary contamination. On 25 June 2020, EASA issued two SDs[1] superseding the previous ones and mandating the cleaning and disinfection of aircraft that are involved in the commercial air transport of passengers to, from and within Europe at least once every 24 hours, before a long-haul flight and before any flight following a long-haul flight, or following the identification of a COVID-19 suspected case on board.

1.4 Consequently, EASA has updated this guidance, giving proper consideration to the publications of the WHO[2] and the ECDC[3] in order to provide support to its stakeholders in terms of how cleaning and disinfection are expected to be performed in the context of the above-mentioned SDs.

1.5 During the update of its guidance, EASA has considered recent research on the resistance of the SARS-CoV-2 virus on inanimate surfaces (GünterKampf, 2020) (van Doremalen, et al., 2020) as

---

1 https://ad.easa.europa.eu/ad/SD-2020-03
https://ad.easa.europa.eu/ad/SD-2020-04

2 WHO *Guide to Hygiene and Sanitation in Aviation*, Third Edition, 2009 (https://www.who.int/water_sanitation_health/publications/aviation_guide/en/)
WHO *Cleaning and disinfection of environmental surfaces in the context of COVID-19*, 16 May 2020 (https://www.who.int/publications/i/item/cleaning-and-disinfection-of-environmental-surfaces-inthe-context-of-covid-19)
WHO *Operational considerations for managing COVID-19 cases or outbreak in aviation: interim guidance*, 18 March 2020 (https://www.who.int/publications/i/item/operational-considerations-for-managing-covid-19-cases-or-outbreak-in-aviation-interim-guidance; https://apps.who.int/iris/bitstream/handle/10665/331488/WHO-2019-nCoV-Aviation-2020.1-eng.pdf)

3 ECDC *Interim guidance for environmental cleaning in non-healthcare facilities exposed to SARS-CoV-2*, 18 February 2020 (https://www.ecdc.europa.eu/en/publications-data/interim-guidance-environmental-cleaning-non-healthcare-facilities-exposed-2019)
ECDC *Disinfection of environments in healthcare and non-healthcare settings potentially contaminated with SARS-CoV-2*, 26 March 2020 (https://www.ecdc.europa.eu/en/publications-data/disinfection-environments-covid-19)

well as research material on efficient disinfecting agents (Klaus, et al., 2016) (ECDC - Baka, Agoritsa; Cenciarelli, Orlando, 2020) in the context of a potential coronavirus contamination.

2. General considerations

2.1 There are three possible ways by which infection can be transmitted on board aircraft:

(1) direct inhalation of respiratory droplets and/or suspended airborne particles;

(2) direct contact with saliva, faecal matter or other potentially contaminated body fluids;

(3) direct contact with saliva, faecal matter or other potentially contaminated body fluids deposited on surfaces or, for maintenance staff, entrained in ventilation and air conditioning systems.

2.2 The main source of infection for other air travellers is from an infected person, and close proximity to an infected person is an important risk factor for droplet-transmitted infections. Once the infected person is no longer in close proximity, the risk of exposure to respiratory droplet is considerably reduced. Nevertheless, scientific evidence (GünterKampf, 2020) (van Doremalen, et al., 2020) shows that the SARS-CoV-2 aerosol and fomite transmission is plausible since the virus can remain viable and infectious in aerosols for hours and on surfaces up to several days, depending on the type of surface and the environmental conditions. In this context, the possibility for the virus to remain in the aircraft environment through the common surfaces contaminated by the infected passenger, and after the infected passenger has disembarked, requires mitigating action in order to prevent further contamination.

2.3 Sometimes, a case of a communicable disease is known only several days (or longer) after the infected person has travelled, and may have deposited pathogens on the interior surfaces of the aircraft. The risk of infection upon contact with such contaminated surfaces will depend on the viability of the virus on the specific surface, the number of organisms, the environmental conditions (e.g. temperature, humidity), whether the surface has been properly cleaned and/or disinfected and, of course, the personal susceptibility of the persons that touch the contaminated surfaces.

2.4 For the disinfection of commercial air transport aircraft, aircraft operators together with ground-handling companies that provide cleaning and disinfection services should take into account the following:

— specific characteristics of the aircraft (flight-crew compartment design and passenger cabin design for both fixed-wing and rotary-wing aircraft);

— the type of surfaces involved; and

— the recommendations of the aircraft manufacturer in terms of disinfecting products and agents that are allowed to be used.

2.5 For this purpose, all disinfectants used, in addition to their disinfecting properties as regards SARS-CoV-2 and being health safe, must be aircraft-component compatible, meaning they must not have any negative effects on the individual parts or the structure of the aircraft, while also being nationally approved for use. When choosing a disinfectant, it must be ascertained that its application is not likely to have damaging effects on the human health or on the aircraft in terms of:

— aircraft structure (i.e. corrosion);

— electronics and avionics (i.e. insulation of cables);

— sensors (i.e. smoke detection);

— interior (i.e. installations, seats, monitors, media devices, windows, galleys, worktops, lavatories).

2.6 It is, therefore, necessary to exercise great caution in selecting cleaning and disinfecting products that are suitable for aircraft use. It is important to protect the health of cleaning staff, aircrews and passengers, as well as to ensure effectiveness against SARS-CoV-2.

2.7 Consequently, only those cleaning and disinfecting substances should be used that are nationally approved for aircraft use against SARS-CoV-2 and that have been recommended by the aircraft manufacturer for this purpose (see also point 3.2).

Note 1: The approval process for cleaning and disinfecting substances at national level varies among the European Union Member States. It may be performed by national agencies for chemical, environment or health safety. Nevertheless, the companies that provide cleaning and disinfecting services should be aware of this process and the list of approved cleaning and disinfecting substances in their country.

EASA has been made aware that certain cleaning and disinfecting substances recommended by aircraft manufacturers may be approved in some States but not in all European Union Member States. In such cases, EASA urges national competent authorities to collaborate as much as possible with the relevant national agencies to expeditiously allow the use of those cleaning and disinfecting substances that have been already approved in another European Union Member State for aircraft cleaning and disinfection.

2.8 A list of efficient cleaning and disinfecting substances to be used for disinfection against SARS-CoV-2 and principles to be considered was published by the ECDC (ECDC - Baka, Agoritsa; Cenciarelli, Orlando, 2020) at the following links:

— https://www.ecdc.europa.eu/en/publications-data/interim-guidance-environmental-cleaning-non-healthcare-facilities-exposed-2019

— https://www.ecdc.europa.eu/en/publications-data/disinfection-environments-covid-19 (ECDC, 2020)

2.9 Furthermore, the US Environmental Protection Agency published its 'EPA's Registered Antimicrobial Products for Use Against Novel Coronavirus SARS-CoV-2, the Cause of COVID-19' available at the following links:

— https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2-covid-19

— https://www.ecri.org/components/HDJournal/Pages/Disinfectant-Concentrations-for-EPA-list-N-COVID-19.aspx?tab=2

2.10 Cleaning staff should be adequately trained so they understand and follow the procedures that will ensure the effectiveness of the cleaning and disinfecting substances, use the proper personal protective equipment (PPE), prevent contamination of other areas, and minimise occupational health and safety risks to other staff, including ensuring adequate ventilation of confined areas, such as lavatories.

2.11 Compressed air and/or water for cleaning, or any other methods that can cause splashing or might re-aerosolise infectious material, should not be used. Vacuum cleaners may be used, but only after being properly disinfected.

2.12 Cleaning staff should protect themselves by wearing appropriate personal protective equipment (PPE), such as gloves, face masks, face shields, and protective clothing, according to standard operating procedure requirements. Face masks should be replaced regularly in accordance with the manufacturer's instructions (for example, most surgical face masks do not provide protection after 4 hours of use).

Note 2: Proper consideration should be given also to the national guidelines, where available, for cleaning and disinfection, published by the national public health authorities.

2.13 There are several types cleaning and disinfection possible:

— routine aircraft cleaning,

— preventive cleaning and disinfection of aircraft,

— cleaning and disinfection of aircraft in flight,

— cleaning and disinfection of aircraft after an occurrence (when identifying a symptomatic person onboard).

2.14 This guidance focuses on the following:

— preventive cleaning and disinfection of aircraft,

— cleaning and disinfection of aircraft in flight, and

— cleaning and disinfection of aircraft after an occurrence.

3. Preventive cleaning and disinfection of aircraft

3.1 The aim of the programmes for preventive aircraft cleaning and disinfection should be the disinfection of all passenger aircraft. The size and ground time (stopover time) of the aircraft should also be taken into account. Aircraft cleaning and disinfection should be performed in accordance with the relevant part of the Aircraft Maintenance Manual (AMM).

3.2 The aircraft operator's engineering department should provide a technical review and approval of use for each cleaning and disinfecting product/substance used, taking into consideration the list of effective substances published by the national public health authorities and the manufacturer's recommendations (recommended cleaning and disinfecting substances are normally listed in the AMM).

3.3 In terms of practicalities, the list below contains recommended practices to ensure that efficient disinfection is performed.

Cleaning staff should:

(1) use different cleaning tools (e.g. cloths and mops) for each area, potentially colour-coding them, in order to reduce cross-contamination;

(2) not cause damage to the aircraft components, should rub and visibly wet the surfaces with disinfectant for the entire contact time (also known as 'wet time') indicated on the product label, and remove it afterwards;

(3) apply disinfectant on the floor from front to aft, and then again in the opposite direction before any other cleaning and disinfection manoeuvres;

(4) typically perform thorough cleaning before disinfection;

(5) clean and disinfect the key areas as noted below, beginning from the top (ceiling) and moving progressively downwards (floor), working from clean-to-dirty areas:

(a) Aisles

Ceiling, overhead bins, reading lights, air-supply nozzles, sidewall panels, windows and window shades, seats (tray tables, armrests, passenger control units, and decorative panels), cabinets/lockers, bulkheads, magazine racks, cabin crew seats (jump seats).

(b) Lavatories

The disinfection of lavatories should be progressed from clean areas to contaminated areas, as follows: ceiling, sidewalls, toilet bowls, waste bins, basins, door assembly (door surfaces, door handles, locking device, and ashtrays (if installed)).

(c) Galleys

Ceiling, ovens, water boilers, coffee makers, galley facilities, lockers/drawers, waste bins.

(d) Flight crew compartment

For aircraft where the flight crew compartment is separated from the passenger cabin, relevant flight crew compartment surfaces and equipment should be thoroughly cleaned before starting the flight preparation. Preventive disinfection should be considered following layovers in which the flight crew had to leave the airport's restricted areas (e.g. transfer to a hotel for a rest period) in areas with confirmed local transmission of SARS-CoV-2. Otherwise, the flight crew compartment should be routinely cleaned.

For aircraft where the flight crew compartment is not separated from the passenger cabin, the frequency of preventive disinfection of the flight crew compartment should be the same as for the passenger cabin.

Cleaning and disinfection of the flight crew compartment should be performed by properly trained staff.

(e) Cabin

All galley surfaces and equipment, such as the equipment used for pre-flight safety demonstration, communication equipment and cabin crew seat harnesses should be thoroughly cleaned and disinfected before starting the flight preparation.

Frequently touched cabin equipment, such as interphones, should be thoroughly cleaned and disinfected before and after every flight and, if necessary, during the flight. Approved disinfectant/sanitisers should be available on board.

All passenger seats and seat belt buckles should be thoroughly cleaned and disinfected. The cleaning procedure should be adjusted depending on the material used for the seat/seat covers, for example:

— Woven Fabrics – Seat Covers need to be removed and either dry-cleaned or machine washed to eliminate the risk of transmission to safe levels. Whilst the top surfaces maybe able to be cleaned, the woven nature of the product

means that the bottom layer and section where the yarns intersect cannot be sufficiently cleaned or disinfected without removal of the dress cover.

— Leather – Genuine leather has a wipe clean surface but should only be cleaned with mild soap or surfactant solution so as to avoid irreparable damage to the product. Genuine leather cannot be dry-cleaned or machine washed.

— Coated Fabrics (e.g. synthetic leather) – provided the product has a polycarbonate top coat, the following preventive disinfection should be considered:

- Clean the seat cover using an approved cleaning solution and/or vacuum cleaner to remove any foreign objects or debris and clean the surface.
- Using one of the approved disinfection products, apply the disinfection product and allow to sit on the surface as per the manufacturer's recommended dwell time.
- After the dwell time, wipe the surface down with a damp cloth to remove an residual disinfectant.

Items that are frequently used should be cleaned and disinfected, including overhead stowage compartment handles, passenger control units, touch-screen monitors.

(f) Oxygen-dispensing equipment and emergency equipment

Should oxygen-dispensing equipment (i.e. therapeutic oxygen, drop-down oxygen masks and quick-donning masks) or other emergency equipment be used during the flight, it should be thoroughly cleaned and disinfected after use.

3.4 Any residual disinfection substances that may be harmful to humans should be removed from the seat covers or any other surfaces. This is essential especially when using cleaning and disinfection products which can cause skin irritation or harm.

3.5 Disinfection should follow the general principle of thorough disinfection from out ring-to-centre, top-down and all-around approach.

3.6 The cleaning and disinfection activities should be documented by making use of the Annex 1 – Aircraft COVID-19 disinfection control sheet. The template is aligned with the ICAO PHC[4] form.

4. Cleaning and disinfection of aircraft in flight

4.1 Aircraft operators should increase the in-flight cleaning and disinfection frequency for items/equipment frequently used by passengers or aircrew members, such as lavatories, door handles, latches, and interphones. These frequently touched surfaces should be regularly cleaned and disinfected, as well as when they become visibly soiled. Only approved disinfectant/sanitisers should be available on board. Aircraft operators should adjust the inflight cleaning and disinfection frequency based on an assessment of the target population and the specificities of their operations (e.g. duration of the flight, number of passengers, route, etc.).

[4] Public health corridor

5. Cleaning and disinfection of aircraft after an occurrence

5.1 Cleaning and disinfection of the aircraft

5.1.1 The procedure for disinfection after an event in this particular context should be understood as the disinfection of an aircraft after the transport of a symptomatic person (having fever, persistent cough or other flu-like symptoms) who also has an epidemiologically-relevant context (having been in direct contact with a confirmed case). Additionally, this type of cleaning and disinfection should be also performed in situations where there is an event that causes heavy contamination of certain surfaces with sputum or other potentially contaminated body fluids/substances (e.g. vomit).

5.1.2 In case of heavy contamination of certain areas or surfaces with body fluids/substances (e.g. sputum or vomit from the ill person), the first step should be to remove the excess from the overly contaminated areas or surfaces by using an absorbent material or absorbent disinfectant, ensuring that the excess contaminant will be solidified and should then be disposed of. Large contaminated areas or surfaces (e.g. covering most of a tray table) should be treated with disinfectant after removing first the excess contaminants as described above, and then thoroughly cleaning and disinfecting them. Carpeting and/or seat covers with a substantially contaminated area should be carefully removed, placed in a sealed plastic bag labelled as 'biohazard' and laundered in accordance with the manufacturer's instructions. Alternatively, if proper cleaning and disinfection are not possible, the contaminated carpeting and/or seat covers should be destroyed. In case of seat contamination that has penetrated the seat cover, the underlying seat upholstery may need to be removed for efficient disinfection.

5.1.3 After the disembarkation of passengers and aircrew is completed, the cabin doors should be closed and the air-conditioning system adjusted to the maximum volume to ensure complete air exchange.

5.1.4 Once the air exchange is completed, the first area to be disinfected should be the sitting area of the suspected/ill passenger(s) and the designated lavatory (as defined in the section on the management of suspected passengers below), then the other areas should be cleaned and disinfected in accordance with the preventive disinfection requirements.

5.1.5 In addition to the preventive disinfection, the disinfection after an event should include thorough cleaning of the seat area of the suspected case and of the seat area in the close proximity (two (2) seats in every direction), including the following:

(1) armrests;

(2) seatbacks (the plastic and/or metal part);

(3) tray tables;

(4) seat belt buckles;

(5) light and air supply controls, cabin crew call button, and overhead compartment handles;

(6) sidewall panels and windows/window shades;

(7) portable electronic devices (PEDs) made available to passengers;

(8) individual video monitors, touchscreens and remote controls.

5.1.6 Thorough cleaning and disinfection (allowing for the full contact time as indicated on the product label between the disinfectant and the surface) of the lavatory or lavatories used by the suspected case, including the disinfection of:

(1) door handle(s),

(2) locking device(s),

(3) toilet seat(s),

(4) tap(s),

(5) washbasin(s),

(6) sidewall panels and counter.

5.1.7 The air conditioner should be turned off during the disinfection operation, and the passenger cabin must be fully ventilated after disinfection.

5.1.8 Regarding suitable disinfectants, the WHO provides the following statement in its 'Guide to Hygiene and Sanitation in Aviation' (World Health Organization, 2009): "Hydrogen peroxide-based disinfectants containing additives such as surfactants and chelators have shown good results in scientific studies, and some industries already using these products are reporting excellent results. Ethanol has also been found to be an effective and suitable disinfectant for aircraft. However, other materials could be considered if they are approved or registered for surface disinfection and sanitisation on aircraft by an appropriate government or independent organisation, as applicable."

Note 3: It must be noted that ethanol-based agents are flammable and the explosive level has to be closely observed during their use. Furthermore, the use of such agents in the close proximity of the oxygen system should be avoided.

Hydrogen peroxide-based hand sanitisers can increase the probability of false alarms with Explosive Trace Detection (ETD) (source: ACI)

5.1.9 Aircraft manufacturers recommend the use of a 70% aqueous solution of Isopropyl Alcohol (IPA) as a disinfectant for the touch surfaces. Based on the findings and experience gained during the SARS-CoV-2 outbreak in terms of disinfecting agents, hydrogen peroxide or chlorine-containing disinfectants may also be used as efficient disinfectants for SARS-CoV-2. The concentration of hydrogen peroxide should not be higher than 3 % and the contact time should be 20 minutes, and the effective concentration of chlorine should be 1 000 mg/L, for 30 minutes.

5.1.10 When cleaning and disinfection are completed, the personal protective equipment (PPE) should be carefully removed and treated as follows:

(1) disinfect the gloves before removing them;

(2) remove the gloves;

(3) disinfect your hands after removing the gloves;

(4) remove the protective suit;

(5) disinfect your hands;

(6) remove the face mask and the goggles;

(7) clean your hands and other parts of your body, which may have been exposed to contaminants, with soap and water or an alcohol-based hand rub;

(8) avoid touching the face with gloved or unwashed hands.

5.2 Managing of a symptomatic passenger

5.2.1 If, after take-off, a passenger shows COVID-19 compatible symptoms, such as fever, persistent cough, difficulty breathing or other flu-like symptoms, the recommendations detailed in Section 3.5 of the EASA ECDC COVID-19 Aviation Health Safety Protocol[5] on 'Management of passengers on-board the aircraft with COVID-19-compatible symptoms' should be followed.

6. Helicopter operations

6.1 While helicopter operations tend to be more local, helicopters should also be regularly disinfected when operating in high-risk areas, depending on the type of operation — also considering that most helicopter cabins do not have any internal compartments; therefore, the protection of passengers and flight crews is very important.

6.2 In particular, for air ambulance and helicopter emergency medical service (HEMS) operations, considering the specific medical circumstances, extreme caution should be exercised during the COVID-19 outbreak. The flight crew should avoid, as much as possible, being involved in the handling of the medical passenger, in order to maintain some physical distancing. Medical crew members on board should be the ones taking care of the patient. The aircraft operator's flight crew and medical staff should respect and observe physical distancing. As physical distancing is not effective inside a helicopter, aircraft operators of multi-crew operations may consider crewing the same persons together to avoid cross-contamination. Road ambulance should be the preferred option for patients known to be infected. The flight crew should wear personal protective equipment (PPE) such as face masks, if compatible with the mission. Further protection measures may be imposed for air ambulance and HEMS operations based on the epidemiological risk assessment of the medical crew.

6.3 Proper consideration should be given to the general recommendations made in Section 2 of this guidance in terms of suitability of cleaning and disinfecting substances and protection of aircrews.

6.4 The aircraft interior should be cleaned before disinfection in accordance with the established operator procedures. The disinfection should be performed after each flight when operating from a high-risk area or after transporting a COVID-19 suspected passenger. The aircraft operator may adjust the frequency of cleaning and disinfection based on a risk assessment that takes into account the operational circumstances and the duration of the disinfection effects of the substances used. In such case, the aircraft operator should ensure that the aircraft is fully cleaned and disinfected at least once every 24 hours. Furthermore, for air ambulance and HEMS operators, the frequency of cleaning and disinfection may be adjusted based on the epidemiological assessment of the medical crew.

6.5 Whenever practicable, any interior items (including seat cushions, protective covers, curtains, cabinets and equipment) should be removed to assist access. The removed interior items should be disinfected in accordance with the applicable manufacturer specifications (if any) or by applying generally accepted procedures.

5 https://www.easa.europa.eu/document-library/general-publications/covid-19-aviation-health-safety-protocol

6.6 Disinfection products should be applied, using pre-impregnated wipes (scrub and wipe technique) to keep the materials localised. Disinfectants can be used on the installed aircraft interior and exterior handles, including:

(1) covers;

(2) floor;

(3) panelling, including sides, overhead and cargo compartment;

(4) windows;

(5) internal and external handles;

(6) seat belt buckles (does not apply to seat belt webbing);

(7) seats and seat covers;

(8) medical interior;

(9) medical retainers;

(10) stretcher platform and stretcher (handles and surfaces);

(11) inside/outside door handles.

6.7 In order not to cause damage to the helicopter during the application of disinfectants, the following should definitely be avoided:

(1) spraying, evaporation or uncontrolled application of disinfectants in the interior of the helicopter;

(2) puddle formation and penetration in crevices/joints, etc.;

(3) contact with electric or electronic components;

(4) contact with cockpit displays, glass covers on flight instruments and any equipment screen surfaces.

6.8 Cleaning staff that use such disinfection products should follow the manufacturer's safety instructions and should use appropriate personal protection equipment (PPE).

6.9 For additional material on this topic, please refer to the resources available at:

https://www.easa.europa.eu/document-library/general-publications/coronavirus-advice-airlines-and-their-crews#group-easa-related-content

Annex I – AIRCRAFT COVID-19 DISINFECTION CONTROL SHEET

Aircraft Registration: __________

Aircraft disinfection was made in accordance with the recommendation of the EASA Guidance on aircraft cleaning and disinfection.

Date *(dd/mm/yy)*	Time (24hr -UTC)	Airport (ICAO code)	Remarks	Disinfector name

Aircraft areas treated	Disinfectant material	Comments	Disinfector signature
Flight deck □ Passenger cabin □ Cargo compartment(s) □ Other: _________________ _______________________			

Date *(dd/mm/yy)*	Time (24hr -UTC)	Airport (ICAO code)	Remarks	Disinfector name

Aircraft areas treated	Disinfectant material	Comments	Disinfector signature
Flight deck □ Passenger cabin □ Cargo compartment(s) □ Other: _________________ _______________________			

Date *(dd/mm/yy)*	Time (24hr -UTC)	Airport (ICAO code)	Remarks	Disinfector name

Aircraft areas treated	Disinfectant material	Comments	Disinfector signature
Flight deck □ Passenger cabin □ Cargo compartment(s) □ Other: _________________ _______________________			

(ICAO, 2020)

References

ECDC - Baka, Agoritsa; Cenciarelli, Orlando. (2020). *Interim guidance for environmental cleaning in non-healthcare facilities exposed to SARS-CoV-2.* Stockholm: ECDC.

Airbus Helicopters. (2020). Information Notice - No. 3476-I-12. *SERVICING – Disinfection of the Helicopter Interior and the External handles*.

Bell . (2020). *Cleaning/disinfecting recommendations for Coronavirus (COVID-19).* Information letter IL-GEN-20-146.

ECDC. (2020, 03 26). *Disinfection of environments in healthcare and non-healthcare settings potentially contaminated with SARS-CoV-2.* Retrieved from https://www.ecdc.europa.eu/en/publications-data/disinfection-environments-covid-19

GünterKampf. (2020). Potential role of inanimate surfaces for the spread of coronaviruses and their inactivation with disinfectant agents. *Infection Prevention in Practice*.

ICAO. (2020). *Electronic Bulletin EB 2020/36 - IMPLEMENTING A PUBLIC HEALTH CORRIDOR TO PROTECT FLIGHT CREW DURING THE COVID-19 PANDEMIC (CARGO, MAINTENANCE, FERRY, AND DELIVERY FLIGHT OPERATIONS).*

Klaus, J., Gnirs, P., Hölterhoff, S., Wirtz, A., Jeglitza, M., Gaber, W., & Gottschalk, R. (2016). Disinfection of aircraft: Appropriate disinfectants and standard operating procedures for highly infectious diseases. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*, 59(12):1544–1548.

Leonardo. (2020). *Coronavirus 'SARS-CoV-2' Infections - cleaning advices.* Information Letters IL GEN-20-082 and IL GEN-20-084.

van Doremalen, N., Morris, D. M., Bushmaker, T., Holbrook, M. G., Gamble, A., Williamson, B. N., . . . Munster, V. J. (2020). Aerosol and Surface Stability of SARS-CoV-2. *The new england journal of medicine*.

WHO. (2020, March 20). *Operational considerations for managing COVID-19 cases or outbreak in aviation.* Retrieved from WHO.int: https://apps.who.int/iris/bitstream/handle/10665/331488/WHO-2019-nCoV-Aviation-2020.1-eng.pdf

World Health Organisation. (2009). *Guide to Hygiene and Sanitation in Aviation.* Geneva: WHO; ISBN 978 92 4 154777 2.

Centers for Disease Control and Prevention

Ebola (Ebola Virus Disease)

Interim Guidance for Ebola Virus Cleaning, Disinfection, and Waste Disposal in Commercial Passenger Aircraft

This guidance addresses the rare event of a traveler having symptoms consistent with Ebola being present on a commercial passenger aircraft and later being confirmed to have Ebola. A traveler exhibiting symptoms consistent with late-stage Ebola on a commercial passenger aircraft is more likely to have a different sickness than Ebola.

What flights this applies to: This guidance applies to commercial passenger flights arriving in the United States and all domestic flights within the United States.

Who this is for: Airlines and airline employers with personnel working on passenger aircraft that may transport a sick traveler with symptoms consistent with Ebola on a flight; also airlines and contract companies whose staff may clean, disinfect, and remove contaminated waste from an aircraft with a traveler who, after the flight was completed, was tested and *lab-confirmed* to have Ebola.

How to use: Use these recommendations 1) to develop a protocol for handling a traveler exhibiting symptoms consistent with Ebola while in flight, 2) to guide personnel in cleaning and disinfecting the aircraft after a flight, and 3) as a reference for effective disinfectant products and relevant employee federal regulations. This guidance does not relieve any person of the obligation to comply with all applicable FAA regulations.

Related guidance: CDC's Preventing Spread of Disease on Commercial Aircraft: Guidance for Cabin Crew details general infection control precautions and management of a sick traveler in-flight. This guidance provides additional guidance on cleaning, disinfection, and waste disposal procedures.

Assessment of Travelers

- Airlines should ensure that their personnel are trained to carefully observe travelers and question them regarding exposures and symptoms.
- Has the passenger had exposure to Ebola, i.e., lived in or traveled to a country (not including the transit through an airport) where widespread transmission of Ebola is occurring, had contact with an individual with lab-confirmed Ebola, or been identified by public health authorities as having contact with a patient with confirmed Ebola?
- Does the passenger have symptoms consistent with Ebola (fever, severe headache, muscle pain, weakness, fatigue, diarrhea, vomiting, stomach pain, or unexplained bruising or bleeding)?
- If the passenger answers YES to both the exposure and symptom questions, the airline should immediately follow CDC's Airline Guidance for Reporting Death/ Illness. If the sick traveler answers NO, the airline should follow routine procedures.

Key Points

- Airlines should review their emergency operations protocols to ensure they clearly reflect the lines of communication between the aircraft and airline dispatch, as well as between the airline and air traffic control, the destination and departure airports, and public health and/or other assigned authorities, in the event a traveler begins to have symptoms consistent with Ebola during a flight.
- Airlines should also ensure that all relevant personnel are familiar with the procedures applicable in the event that a sick traveler with symptoms consistent with Ebola is identified on board a flight, either during or after the flight.

Routine practices regardless of the presence of a sick traveler

- Airlines should remind airline personnel to follow careful hygiene practices and infection control procedures, such as washing hands regularly with soap and water or an alcohol-based hand sanitizer with at least 60% alcohol.
- Airlines should direct the airline personnel and/or designated cleaning crew to clean the passenger aircraft using detergent and/or airline-specified disinfectant and/or refer to the "Guide to Hygiene and Sanitation in Aviation" developed by the World Health Organization (WHO) [PDF – 71 pages] . Any cleaner and disinfectant should not adversely affect the aircraft.
- Per federal regulations, reporting death or illness is required. Reporting tools for airlines, cabin crew, and pilots are available in the Airline Guidance for Reporting Death/Illness.

Lavatory wastes: Airlines should share the CDC's Interim Guidance for Managers and Workers Handling Untreated Sewage from Individuals with Ebola in the United States and Frequently Asked Questions for Managers and Workers Handling Untreated Sewage from Suspected or Confirmed Individuals with Ebola in the U.S. Personnel should routinely handle lavatory wastes using proper personal protective equipment (PPE) and hygiene practices for all flights, regardless of the presence of a passenger with symptoms consistent with Ebola. In relation to fecal and urine wastes found in lavatory's, there has been no evidence to date that Ebola can be transmitted via exposure to sewage (Weber and Rutala 2001 [PDF – 11 pages]).

While in flight

- If the traveler is considered to have had exposure to Ebola and is exhibiting symptoms consistent with Ebola, yet **has NO gastrointestinal (e.g., diarrhea, vomiting) or hemorrhagic symptoms (e.g., bleeding)** while he or she was on the passenger aircraft, the traveler is not likely to have contaminated the cabin environment. The airline crew and/or designated cleaning crew should apply routine cleaning procedures for the passenger aircraft while following the recommendations in Preventing Spread of Disease on Commercial Aircraft: Guidance for Cabin Crew.
  - If possible, isolate the sick traveler by creating space between the sick traveler and the other travelers, or by moving the other travelers to open seats. This is an extra safety precaution in case the sick traveler begins to have "wet symptoms" of diarrhea, vomiting, and/or bleeding.
- If the traveler is considered to have had exposure to Ebola and **is exhibiting symptoms consistent with Ebola, has gastrointestinal or hemorrhagic symptoms**, then aircraft personnel should isolate the ill traveler by creating space between the ill traveler and the other travelers, or by moving other travelers to open seats, if possible. Additionally, aircraft personnel should apply safety practices and infection control, and follow proper waste management procedures until the destination airport is reached (CDC Guidance for Cabin Crew).
  - Airlines should refer to CDC's Guidance for Cabin Crew and the ATA Guidance for Suspected Communicable Disease for management of an ill traveler if Ebola is suspected.
  - The airline ground personnel should contact local public health and/or assigned authorities for Ebola emergency response at the aircraft's destination, following the CDC Airline Guidance for Reporting Death/ Illness. **Airline personnel and travelers should not directly handle contaminated materials or touch any body fluids or soiled surfaces and materials**. However, in the event the body fluids need to be contained, airline personnel should use the Universal Precaution Kit: (1) don (put on) the supplied PPE (e.g., gloves, apron, and face mask), (2) follow the manufacturer's instructions and carefully apply the solidifier to the fluids, so as to not create splashes or droplets, (3) without touching the contaminated materials, apply absorbent material to cover the solidified materials, and (4) ensure that the contaminated area is isolated until the destination is reached. Airline personnel, using an assistant if needed, should then (1) carefully doff (remove) PPE to avoid contaminating his/herself or their clothes, (2) dispose of the PPE is the designated waste for biohazardous material (double-bagged), and (3) clean hands using soap and water (if visibly soiled) or alcohol sanitizer.
  - The airline, the airport operators, ground handling agents, and potentially the local public health and/or assigned authorities for Ebola emergency response, should have a coordinated plan describing actions needed for the traveler(s) and the passenger aircraft once at the destination (e.g., quarantine, Ebola lab test). This would be similar to recommendations in the "Guide to Hygiene and Sanitation in Aviation" developed by the World Health Organization (WHO) [PDF – 71 pages] regarding communicable diseases cleaning and disinfection of facilities (Chapter 3.1).

After the flight

- The approach for cleaning and disinfecting the aircraft depends on the symptoms of the ill traveler with Ebola at the time they were on the passenger aircraft.

1. For an ill traveler who had exposure to Ebola and symptoms consistent with Ebola but **NO** gastrointestinal or hemorrhagic symptoms, routine cleaning and laundering can be conducted by airline personnel or designated cleaning crew/environmental services employees because the traveler should not have contaminated the environment. To date, there is no documented evidence of Ebola virus or other hemorrhagic fever viruses (e.g., Marburg, Lassa, etc.) being transmitted on an aircraft.
2. For an ill traveler who had exposure to Ebola and symptoms consistent with Ebola, **including** gastrointestinal or hemorrhagic symptoms, refer to the CDC Ebola Guidance for Airlines and specifically the guidance for airline cleaning personnel section, as well as the CDC Infection Control Guidelines for Cabin Crew Members on Commercial Aircraft. Note that contaminated waste should be disposed of in a biohazard bag if available or a secured plastic bag labeled as biohazard.
3. In the event a sick traveler, ***lab-confirmed*** **for Ebola** after the flight and had gastrointestinal or hemorrhagic symptoms while on the passenger aircraft, the aircraft should be taken out of service immediately. The aircraft should then be assessed by public health and/or assigned authorities or a contract company to determine the proper cleaning, disinfecting, and disposal procedures.
    - The public health authorities can assist in finding a qualified contract company to clean and disinfect the aircraft. Any contract company conducting such work must comply with its state's Ebola policies and with OSHA standards for, among others that may apply, bloodborne pathogens (29 CFR 1910.1030), personal protective equipment (PPE) (29 CFR 1910.132), respiratory protection (29 CFR 1910.134), and hazard communication (29 CFR 1910.1200) (e.g., for chemical hazards). In states that operate their own occupational safety and health programs, different or additional requirements may exist. **Only areas that were contaminated with diarrhea, vomit, blood, and/or other body fluids, will need to be cleaned and disinfected**.
    - The contract company should use an Environmental Protection Agency (EPA)-registered hospital disinfectant (or professional product) with a label claim against a non-enveloped virus, such as norovirus, rotavirus, adenovirus, or poliovirus, according to manufacturer's instructions. Currently, no EPA-registered disinfectant products will have a statement on the label that specifically says it can kill Ebola virus. However, any EPA-registered hospital disinfectant (or professional product) that is effective against a non-enveloped virus will also be effective against Ebola virus. One simple way to identify an appropriate product effective against Ebola virus is to use a product with a label claim against non-enveloped viruses, such as those included in EPA's List L: Disinfectants for Use Against the Ebola Virus . As certain disinfectants may be incompatible with aircraft components, any disinfectant used on board an aircraft should be cleared as acceptable for the aircraft.

Recommendations for the contract company that cleans and disinfects the aircraft

- Follow CDC's Guidance for Cabin Crew, CDC's Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus, and OSHA's Fact Sheet 3756 on Cleaning and Decontamination of Ebola on Surfaces – Guidance for Workers and Employers in Non-Healthcare/ Non-Laboratory Settings [PDF – 4 pages] .
- For non-porous surfaces (e.g., door handles, arm rests, tray tables), use an EPA-registered disinfectant according to the manufacturer's instructions with a label claim against a non-enveloped virus, such as norovirus, rotavirus, adenovirus, or poliovirus. One simple way to identify an appropriate product effective against the Ebola virus is to use a product included in EPA's List L: Disinfectants for Use Against the Ebola Virus . Any EPA-registered disinfectant that is effective against a non-enveloped virus will also be effective against Ebola virus. As certain disinfectants may be incompatible with aircraft components, any disinfectant used on board an aircraft should be cleared as acceptable for the aircraft.
- Porous materials (e.g., linens, carpet, pillows, seat cushion) should be properly contained, cleaned, and disinfected, and/or disposed of according to regulations set by the impacted state (e.g. the state in which the waste is located). Store the properly contained contaminated material in an area or room that is not being used until it can be collected for disposal. For waste generated during the care of the traveler diagnosed with or suspected of having Ebola (e.g., PPE, paper towels), additional CDC recommendations for Ebola Medical Waste Management provide further information regarding the safe handling and disposal of such waste.
- The waste associated with the traveler exhibiting symptoms consistent with Ebola should be securely held until lab-confirmed as positive or negative for Ebola virus. If lab-confirmed as positive, the waste must be packaged and transported in accordance to U.S. DOT Hazardous Materials Regulations (HMR, 49 CFR, Parts 171-180) and U.S. DOT Safety Advisory: Packaging and Handling Ebola Virus Contaminated Infectious Waste for Transportation to Disposal Sites .

- **Contract company requirements and PPE (biological and chemical)**: Contract company employees must be properly trained. The contract company is responsible for selecting and providing PPE to protect their workers from exposure to Ebola virus and to chemical hazards from the cleaning and disinfectant agents. Refer to the OSHA PPE Selection Matrix for assistance in determining the appropriate PPE. Where respiratory hazards exist, such as from aerosolized viral particles or chemicals used for cleaning and disinfection, workers must use NIOSH-approved respirators, be fit-tested before using respirators, and be medically cleared. Note that medical clearance for respirators is determined by the institution, which may involve a questionnaire for screening, physical examination and spirometry, and/or chest x-ray.
  - OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030)
  - OSHA Personal Protective Equipment (29 CFR 1910.132)
  - OSHA Respiratory Protection (29 CFR 1910.134)
  - Hazard Communication Standards (29 CFR 1910.1200)
- Biological – PPE recommendations for contract companies are the same as those in CDC's Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing) and OSHA's Fact Sheet 3756 on Cleaning and Decontamination of Ebola on Surfaces – Guidance for Workers and Employers in Non-Healthcare/ Non-Laboratory Settings [PDF – 4 pages] .
- Chemical – Contract companies are required to have completed OSHA training for Hazard Communication Standards and should follow OSHA/ NIOSH guidelines for Protecting Workers Who Use Cleaning Chemicals [PDF – 4 pages] .
- The contract company may additionally, beyond the OSHA regulatory requirements stated above, be certified through such associations as the National Institute of Decontamination Specialists (NIDS), Institute of Inspection, Cleaning and Restoration Certification (IICRC), American Bio Recovery Association (ABRA), or complete training as outlined in the OSHA Hazardous Waste Operations and Emergency Response Standard (HAZWOPER).

Additional Airline Considerations

- A U.S. Department of Transportation rule permits airlines to deny boarding to air travelers with serious contagious diseases that could spread during flight, including travelers with symptoms that could be Ebola. This rule applies to all flights of U.S. airlines and to direct flights (no change of aircraft) to or from the United States by foreign airlines. (See Department of Transportation Title 14 Code of Federal Regulations , Part 382)
- The International Air Transport Association (IATA) provides guidelines for the cabin crew to assess a traveler with suspected communicable disease.
- The Federal Aviation Administration has investigated vaporized hydrogen peroxide technology as a potential biocide; this may be considered as an option for disinfection of a passenger aircraft (see FAA documents in the Resources section).

Definitions

- *Contract company*: A company hired to complete a needed task. In regards to cleaning and disinfecting aircraft of Ebola virus, the contract company will be specialized in disinfecting, handling, and discarding of toxic chemicals, infectious agents, and other hazardous materials with experience in cleaning biohazard and aircraft interiors.
- *Disinfection product*: A product that will make certain biological agents inactive. Specific to Ebola, use an EPA-registered disinfectant according to the manufacturer's instruction with a label claim against a non-enveloped virus, such as norovirus, rotavirus, adenovirus, or poliovirus. Such products are included in EPA's List L: Disinfectants for Use Against the Ebola Virus .
- *Personal protective equipment (PPE)*: Equipment worn to prevent exposure to hazardous substances (e.g., chemicals, infectious agents, particles). For in-flight Ebola infection control on commercial passenger aircrafts, available PPE may be limited to the equipment in the Universal Precautions or Medical Kits (e.g., gloves, eye protection and/ or facemask). For Ebola environmental cleaning and disinfection by the contract company, the level of PPE will vary due to the contamination level and chemicals used for cleaning and disinfecting. Refer to the OSHA Ebola page (control and prevention tab) for guidance on appropriate PPE; in particular, the OSHA Fact Sheet – PPE Selection Matrix for Occupational Exposure to Ebola Virus [PDF – 3 pages] and related recommendations in CDC's Guidance on Personal Protective Equipment To Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing).

Table 1. Interim guidance summary for cleaning, disinfecting, and waste disposal in commercial passenger aircraft where during the flight a traveler exhibited symptoms consistent with Ebola and was identified to have the appropriate exposures or lab-confirmed to have Ebola after the flight.

Category	When used	Disinfection and Disposal	Training and PPE
Cleaning by airline-designated cleaning crew	• Traveler who had exposure to Ebola and symptoms consistent with Ebola but NO gastrointestinal (e.g., diarrhea, vomiting) and/or no hemorrhagic (bleeding) symptoms	• Airline designated cleaning crew can use routine cleaning and disinfection with detergent and/or disinfectant cleared for the aircraft • Airline designated cleaning crew can discard waste as normal	• PPE as required by airline and disinfectant product manufacturer's instructions
Cleaning by airline-designated cleaning crew, specifically following CDC guidelines	• Traveler who had exposure to Ebola and symptoms consistent with Ebola including gastrointestinal (e.g., diarrhea, vomiting) and/or no hemorrhagic (bleeding) symptoms	• Follow CDC's Preventing Spread of Disease on Commercial Aircraft: Guidance for Cabin Crew • Contaminated waste should be disposed of in a biohazard bag, if available, or a secured plastic bag labeled as biohazard.	• PPE as required by airline and disinfectant product manufacturer's instructions
Cleaning by contract company	• Traveler with *lab-confirmed* Ebola who had diarrhea, vomiting, and/or unexplained bleeding	• Contact local public health or assigned authorities • Contract company should conduct decontamination and disposal procedures	• Contract company should follow OSHA, DOT, and State and Applicable Local regulations as described

Resources

- 2014 Ebola Outbreak in West Africa
- CDC Airline Guidance for Reporting Death/Illness
- CDC Ebola Medical Waste Management
- CDC Ebola (Ebola Virus Disease), Signs and Symptoms
- CDC Frequently Asked Questions (FAQs) on Interim Guidance for Managers and Workers Handling Untreated Sewage from Suspected or Confirmed Individuals with Ebola in the U.S.
- CDC Infection Control Guidelines for Cabin Crew Members on Commercial Aircraft
- CDC Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus
- CDC Interim Guidance for Managers and Workers Handling Untreated Sewage from Individuals with Ebola in the United States
- Chou, S.F., M.H. Sk, N.I. Sofyan, R.A. Overfelt, W.F. Gale, H.S. Gale, C.G. Shannon, J.W. Fergus, and J. Watson, "Evaluation of the Effects of Hydrogen Peroxide on Common Aviation Structural Materials," FAA Technical Report DOT/FAA/AM-09/23,

2009, Washington, DC: Office of Aerospace Medicine.

- Code of Federal Regulations: Title 49 Transportation
- Department of Federal Aviation Administration and Occupational Safety and Health Administration. Standards for Aircraft Cabin Crew Members [PDF – 4 pages] .
- Gale, W.F., H.S. Gale, and J. Watson, "Field Evaluation of Whole Airliner Decontamination Technologies for a Narrow-Body Aircraft," FAA Technical Report DOT/FAA/AM-08, 2008, Washington, DC: Office of Aerospace Medicine.
- Gale, W.F., H.S. Gale, and J. Watson, "Field Evaluation of Whole Airliner Decontamination Technologies—Wide-Body Aircraft With Dual-Use Application for Railcars," FAA Technical Report DOT/FAA/AM-08/4, 2008, Washington, DC:Office of Aerospace Medicine.
- Shaftstall, R.M., R.P. Garner, J. Bishop, L. Cameron-Landis, D.L. Eddington, G. Hau, S. Spera, T.Mielnik, and J.A. Thomas, "Vaporized Hydrogen Peroxide (VHP®) Decontamination of a Section of a Boeing 747 Cabin," FAA Technical Report DOT/FAA/AM-06/10, 2006, Washington, DC: Office of Aerospace Medicine.
- Transportation Title 14 Code of Federal Regulations, Part 382
- The U.S. Code of Federal Regulations—Interstate Quarantine [42 CFR 70.4]
- The U.S. Code of Federal Regulations—Foreign Quarantine [71.21(b)]
- Occupational Safety and Health Standards (OSHA) for Aircraft Cabin Crewmembers [PDF – 3 pages]
- OSHA Fact Sheet 3756, 'Cleaning and Decontamination of Ebola on Surfaces' [PDF – 4 pages]
- OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030)
- OSHA Ebola Control and Prevention
- OSHA Hazard Communication Standard (29 CFR 1910.1200)
- OSHA Fact Sheet – PPE Selection Matrix for Occupational Exposure to Ebola Virus
  To be published soon.
- OSHA Personal Protective Equipment (29 CFR 1910.132)
- OSHA Respiratory Protection Standard (29 CFR 1910.134)
- OSHA/ NIOSH (2012). OSHA•NIOSH Infosheet: Protecting workers who use cleaning chemicals [PDF – 4 pages]
- U.S. Department of Transportation's Hazardous Materials Regulations (HMR)
- U.S. EPA Office of Pesticide Programs, List L: Disinfectants for Use Against the Ebola Virus
- U.S. EPA Where You Live – State Medical Waste Programs and Regulations
- U.S. DOT Hazardous Materials Regulations. Department of Transportation Guidance for Transporting Ebola Contaminated Items, a Category A Infectious Substance
- Weber, D.J. and W.A. Rutala (2001). Risks and Prevention of Nosocomial Transmission of Rare Zoonotic Diseases. Healthcare Epidemiology. 32:446-456 [PDF – 11 pages] .
- WHO Guide to Hygiene and Sanitation in Aviation (Geneva 2009) [PDF – 72 pages]

Page last reviewed: May 10, 2019

Guide to Hygiene and Sanitation in Aviation

Third Edition

Module 1: Water
Module 2: Cleaning and Disinfection of Facilities

Geneva
2009

World Health Organization

WHO Library Cataloguing-in-Publication Data

Guide to hygiene and sanitation in aviation -- 3rd ed.

Contents: Module 1: Water ; Module 2: Cleaning and Disinfection of Facilities.

1.Aerospace medicine. 2Aircraft. 3.Aviation. 4.Sanitation. 5.Hygiene. 6.Guidelines. I.World Health Organization.

ISBN 978 92 4 154777 2 (NLM classification: WA 810)

Table of contents

ACKNOWLEDGEMENTS

The World Health Organization (WHO) gratefully acknowledges the contributions of the following people to the third edition of the *Guide to Hygiene and Sanitation in Aviation*:

Feroze Ahmed, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
Katherine B. Andrus, Assistant General Counsel, Air Transport Association of America, Inc., Washington, DC, USA
David Bennitz, Public Health Bureau, Health Canada, Ottawa, Ontario, Canada
Colin Browne, Environmental Health Specialist in charge of Port Health, Ministry of Health, St Michael, Barbados, West Indies
Debbie Chuckman, Government Affairs Committee, International Flight Services Association, Mississauga, Ontario, Canada
Joseph Cotruvo, Joseph Cotruvo & Associates LLC, Washington, DC, USA
Dean Davidson, Center for Food Safety and Applied Nutrition, Food and Drug Administration, College Park, Maryland, USA
Nigel Dowdall, British Airways, Waterside (HMAG), Harmondsworth, United Kingdom
Anthony Evans, Aviation Medicine Section, International Civil Aviation Organization, Montreal, Quebec, Canada
David Gamper, Safety and Technical Affairs, Airports Council International, Geneva, Switzerland
John Grace, National Health Committee, Air Safety, Health and Security Department, Association of Flight Attendants-CWA, Washington, DC, USA
Cathy Hollister, Air Transport Association of Canada, Mississauga, Ontario, Canada
Petra Illig, Division of Global Migration and Quarantine, Centers for Disease Control and Prevention, Anchorage, Alaska, USA
Phyllis Kozarsky, Division of Global Migration and Quarantine, Centers for Disease Control and Prevention, Atlanta, Georgia, USA
Karen J. Marienau, Division of Global Migration and Quarantine, Centers for Disease Control and Prevention, Minneapolis, Minnesota, USA
Dinkar Mokadam, Air, Safety, Health and Security Department, Association of Flight Attendants-CWA, Washington, DC, USA
Jacques Nadeau, Health Canada, Ottawa, Ontario, Canada
Benoît Pilon, Airport and Inflight Services, International Air Transport Association, Geneva, Switzerland
Tim Pohle, Air Transport Association, Washington, DC, USA
Katie Porter, Environmental Protection Agency, Washington, DC, USA
James Ringo, Bio-Cide International, Inc., Norman, Oklahoma, USA
Erica Sheward, University of Central Lancashire, West Sussex, United Kingdom
Claude Thibeault, International Air Transport Association, Montreal, Quebec, Canada
Dulce Maia Trindade, Health Bureau, Centre for Disease Control and Prevention, Macau Special Administrative Region
Christopher Witkowski, Air, Safety, Health and Security Department, Association of Flight Attendants-CWA, Washington, DC, USA

The contributions of the following WHO personnel from WHO Headquarters in Geneva, Switzerland (unless otherwise noted), are also acknowledged:

Ruth Anderson
Jamie Bartram
Yves Chartier
Bruce Gordon
Lena Hope
Emmanuel Jesuthasan
Daniel Lins Menucci, WHO Lyon Office
Bruce Plotkin

Marla Sheffer, Editor, Ottawa, Ontario, Canada

The update of this guide was made possible with the support and collaboration of the United States Environmental Protection Agency; the International Air Transport Association; Health Canada; the United States National Science Foundation; the Ministry of Health, Labour and Welfare, Japan; the Swedish International Development Cooperation Agency; the Federal Ministry of Health, Germany; and the Ministry of Environment and Water Resources, Singapore.

No conflict of interest was declared.

The development of the third edition of the guide to hygiene and sanitation in aviation was motivated by the update of the International Health Regulations 2005. It involved a large number of experts and WHO staff (see names above).

An informal meeting took place in April 2006 in Baltimore, USA, and brought together a number of key international experts. This meeting was to discuss the content of the existing version, define additional contributions, agree on next steps and define key contributors.

A meeting of the Expert Network engaged in the development of the Guide to Hygiene and Sanitation in Aviation, Third Edition, was held in Toronto, Canada, on 24–26 March 2008. The meeting was facilitated by Health Canada.

Once the contents of the update were completed and agreed to by the expert group, the update was shared for peer review with a large number of international experts. Comments were integrated, and the final version was consolidated.

GLOSSARY

Accessible	Capable of being exposed for cleaning and inspection with the use of simple tools, such as a screwdriver, pliers or an open-end wrench.
Adequate hygiene	Level of hygiene sufficient for the prevention of public health risk.
Aircraft water system	Water service panel, filler neck and the onboard water storage tanks and all of the plumbing and fixtures on the aircraft.
Airport water system	On-site airport distribution system and possibly water treatment facilities if the airport is a producer of potable water.
Backflow	Flow of water or other liquids, mixtures or substances into the distribution pipes of a potable supply of water from any source or sources other than the potable water supply. Back-siphonage is one form of backflow. *See also* Back-siphonage.
Backflow preventer	Approved backflow prevention plumbing device that would typically be used on potable water distribution lines where there is a direct connection or a potential connection between the potable water distribution system and other liquids, mixtures or substances from any source other than the potable water supply. Some devices are designed for use under continuous water pressure, whereas others are non-pressure types.
Back-siphonage	Backward flow of used, contaminated or polluted water from a plumbing fixture or vessel or other source into a water supply pipe as a result of negative pressure in the pipe.
Biohazard bag	Bag used to secure biohazard waste that requires microbiological inactivation in an approved manner for final disposal. Such bags must be disposable and impervious to moisture and have sufficient strength to preclude tearing or bursting under normal conditions of usage and handling.
Cleaning	Removal of visible dirt or particles through mechanical action, normally undertaken on a routine and frequent basis. The cleaning process and some products used for cleaning also result in disinfection. *See also* Disinfection.
Communicable disease	Illness caused by organisms such as bacteria, viruses, fungi and parasites that can be directly or indirectly transmitted from an infected person to others. Sometimes the illness is due not to the organism itself, but rather to a toxin that the organism produces after it has been introduced into a human host.
Competent authority	Authority responsible for the implementation and application of health measures under the International Health Regulations (2005).
Control measures	Those steps in the drinking-water supply that directly affect drinking-water quality and that collectively ensure that drinking-water consistently meets health-based targets. They are activities and processes applied to prevent hazard occurrence.
Corrosion resistant	Capable of maintaining original surface characteristics under prolonged influence of the use environment, including the expected food contact and the normal use of cleaning compounds and sanitizing solutions. Corrosion-resistant materials must be non-toxic.

Cross-connection	Any unprotected actual or potential connection or structural arrangement between a potable water plumbing system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas or substance other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or change-over devices and other temporary or permanent devices through which backflow can occur are considered to be cross-connections.
Disinfection	The procedure whereby measures are taken to control or kill infectious agents on a human or animal body, on a surface or in or on baggage, cargo, containers, conveyances and goods by direct exposure to chemical or physical agents.
Durable materials and constructions	Materials and constructions that can withstand normal use and abuse.
Environmental control system	System that provides air supply, thermal control and pressurization for the passengers and crew travelling on an aircraft used for airline operations.
Food contact surfaces	Surfaces of equipment and utensils with which food normally comes in contact. These include the areas of ice machines over the ice chute to the ice bins. *See also* Non-food contact surfaces.
Food handling area	Any area where food is stored, processed, prepared or served.
Food preparation area	Any area where food is processed, cooked or prepared for service.
Food service area	Any area where food is presented to passengers or crew members (excluding individual cabin service).
Food storage area	Any area where food or food products are stored.
Food transport area	Any area through which unprepared or prepared food is transported during food preparation, storage and service operations (excluding individual cabin service).
Health-based target	A benchmark to guide progress towards a predetermined health or water safety goal. There are four types of health-based targets: health outcome targets, water quality targets, performance targets and specified technology targets.
Non-food contact surfaces	All exposed surfaces, other than food contact or splash contact surfaces, of equipment located in food storage, preparation and service areas.
Non-toxic materials	Materials that, when used in the water distribution system, do not introduce harmful or injurious ingredients or substances into the water.
Operational monitoring	Methods to assess the performance of control measures at appropriate time intervals.
Personal protective equipment	Equipment and materials used to create a protective barrier between a worker and the hazards in the workplace.
Portable	Description of equipment that is readily removable or mounted on casters, gliders or rollers; provided with a mechanical means so that it can be tilted safely for cleaning; or readily movable by one person.

Potable water	Fresh water that is intended for drinking, washing or showering; for handling, preparing or cooking food; and for cleaning food storage and preparation areas, utensils and equipment. Potable water, as defined by the WHO *Guidelines for Drinking-water Quality*, does not represent any significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages.
Potable water tanks	All tanks in which potable water is stored for distribution and use as potable water.
Public health authority	Government agency or designee responsible for the protection and improvement of the health of entire populations through community-wide action.
Public health surveillance	The ongoing, systematic collection, analysis and interpretation of data about specific environmental hazards, exposure to environmental hazards and health effects potentially related to exposure to environmental hazards, for use in the planning, implementation and evaluation of public health programmes.
Readily removable	Capable of being detached from the main unit without the use of tools.
Removable	Capable of being detached from the main unit with the use of simple tools, such as a screwdriver, pliers or an open-end wrench.
Safe material	Article manufactured from or composed of materials that may not reasonably be expected to result, directly or indirectly, in their becoming a component of any food or water or otherwise affecting the characteristics of any food or water.
Seam	Open juncture between two similar or dissimilar materials. Continuously welded junctures, ground and polished smooth, are not considered seams.
Sewage	Any liquid waste that contains animal or vegetable matter in suspension or solution, including liquids that contain chemicals in solution.
Smooth metal surfaces	• Corrosion-resistant alloys would typically have at least a No. 4 mill finish, properly applied. • Cast iron, cast and forged steel and cast nickel alloys, in the food area, would typically have a surface roughness not exceeding American Standard No. 125 (or equivalent). • Galvanized metal surfaces, where acceptable, would typically have the smoothness of good-quality commercial hot dip. • Other metals would typically be at least as smooth as commercial-grade rolled sheet steel and free of loose scale.
Smooth surfaces	Surfaces having the following finishes: • A food contact surface that is free of pits and inclusions with a cleanability equal to or exceeding that of a No. 3 finish (100 grit) on stainless steel. • A non-food contact surface of equipment that is equal to commercial-grade hot-rolled steel and is free of visible scale. • A deck, bulkhead or deckhead that has an even or level surface with no roughness or projections that render it difficult to clean.

Splash contact surfaces	Surfaces that are subject to routine splash, spillage or other soiling during normal use.
Transfer point	Site of intermittent connection for water transfer between the hard-plumbed airport water distribution system and the aircraft water system. Sometimes referred to as Watering point.
Traveller	A person in transit between locations.
Turbidity	Light-scattering cloudiness or lack of transparency of a solution due to the presence of suspended particles. Turbidity is not necessarily visible to the eye.
Validation	Investigative activity to identify the effectiveness of a control measure. It is typically an intensive activity when a system is initially constructed or rehabilitated. It provides information on reliably achievable quality improvement or maintenance to be used in system assessment in preference to assumed values and also to define the operational criteria required to ensure that the control measure contributes to effective control or hazards.
Verification	Final monitoring for reassurance that the system as a whole is operating safely. Verification may be undertaken by the supplier, by an independent authority or by a combination of these, depending on the administrative regime of a given country. It typically includes testing for faecal indicator organisms and hazardous chemicals.
Watering point	*See* Transfer point.
Water safety plan	Documented comprehensive strategy for managing and operating a water supply system.
Water supply surveillance	Continuous and vigilant public health assessment and review of the safety and acceptability of drinking-water supplies. There are two types of approaches: audit-based approaches and approaches relying on direct assessment. In the audit approach, assessment activities, including verification testing, are undertaken largely by the supplier, with third-party auditing to verify compliance. In direct assessment, the drinking-water supply surveillance agency carries out independent testing of water supplies.

ACRONYMS

ACI	Airports Council International
APHA	Association of Port Health Authorities (United Kingdom)
GDWQ	*Guidelines for Drinking-water Quality*
HPC	heterotrophic plate count
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IHR (2005)	International Health Regulations (2005)
NTU	nephelometric turbidity unit
PVC	polyvinyl chloride
PWS	potable water system
SARS	severe acute respiratory syndrome
USEPA	United States Environmental Protection Agency
VOC	volatile organic chemical
WHA	World Health Assembly
WHO	World Health Organization
WSP	water safety plan

1. INTRODUCTION

1.1 General issue and concern

Health and sanitation aspects of international traffic have been of concern to the World Health Organization (WHO) since 1951, when the Fourth World Health Assembly recommended that all governments should "improve sanitary and environmental conditions, especially in and around ports and airports" (resolution WHA4.80); at the same time, the need for "the sanitary protection of populations in mass movement" was also expressed (resolution WHA4.8l). Subsequent resolutions of both the World Health Assembly and the Executive Board emphasized the importance of maintaining high standards of hygiene and sanitation in international traffic (particularly in relation to the provision of safe water and food and the correct procedures for the collection and disposal of wastes).

The annex to the first report of the WHO Expert Committee on Hygiene and Sanitation in Aviation (WHO, 1960a) was published in 1960 as a *Guide to Hygiene and Sanitation in Aviation* (WHO, 1960b). Its use was recommended by the Twelfth World Health Assembly to guide health administrations in "fulfilling their obligations under the existing International Sanitary Regulations, especially the provisions of Article 14, in providing safe food for international air traffic, and in maintaining satisfactory control of, and protection from, malaria vectors at airports" (resolution WHA12.18).

The reports of the Committee on International Surveillance of Communicable Diseases, as adopted by the World Health Assembly, also emphasized the importance of preventing disease through the improvement of sanitary conditions. The relevant articles of the International Health Regulations (1969) (WHO, 1969) laid down sanitation requirements at airports. The provision of criteria and guidelines for the use of administrations in fulfilling their obligations under the International Health Regulations forms an essential part of WHO's functions.

In 1974, the Twenty-seventh World Health Assembly, "believing that, in view of the growth of international traffic, continuous attention should be given to the safety of food and water and the handling of wastes in such traffic", stressed "the need for each Member State to clarify the ultimate responsibility for the safety of food and water and the proper handling of wastes in international traffic" and, furthermore, recommended that "Member States coordinate and ensure the close and active participation in such a responsibility of health authorities, port and airport management, aircraft operators, shipping companies, tourist associations, and any other service or agency concerned with international traffic" (resolution WHA27.46). At the same time, the Director-General of WHO was requested to maintain close contact with representatives of international organizations concerned with international traffic with a view to promoting the implementation and coordination of activities aimed at improving the safety of food and water and the handling of wastes and to prepare appropriate guidance for the use of health professionals. The outcome of these activities was the publication of a second edition of the *Guide to Hygiene and Sanitation in Aviation*, in 1977 (WHO, 1977).

The basic principles of hygiene have not changed significantly since 1977; however, the magnitude of air transport operations has grown tremendously. The number of passengers flying on scheduled airlines rose from 438 million in 1975 to over 2 billion in 2006 (ICAO, 2006), figures that do not take into account charter flight passengers and global corporation

business jet passengers, whose numbers are in the millions and increasing every year. Furthermore, the current trend in international civil aviation is towards aircraft of larger passenger-carrying capacity and greater range. The introduction of air services into areas with inadequate public health infrastructure, such as food handling and storage, water supply and waste disposal, creates a challenge for aircraft operators. To protect public health, the application of high standards of hygiene should form an integral part of airport and aircraft operations.

Although hygiene standards have improved during the last few decades, there remains a need to safeguard the health of crew and passengers against waterborne and foodborne illnesses. Incidents of foodborne illness associated with international air travel that are reported from time to time (Turner, 1971; Peffers et al., 1973; McMullan et al., 2007) serve as a reminder of the need to ensure the quality of food and drinking-water on board aircraft. More recently, worldwide attention has turned to the potential for transmission of communicable diseases, such as severe acute respiratory syndrome (SARS) and extremely drug-resistant tuberculosis,[1] on board aircraft, which has renewed interest in cleaning and disinfecting aircraft.

The International Health Regulations (2005), hereafter referred to as IHR (2005), are an international WHO legal framework addressing risks of international disease spread and legally binding on 194 States Parties throughout the world, including all 193 WHO Member States. The IHR (2005) are very broad, focusing upon almost all serious public health risks that might spread internationally, whether biological, chemical or radionuclear in origin, and whether transmissible in goods (including food), by persons, on conveyances (aircraft, ships, vehicles), through vectors or through the environment. The IHR (2005) contain rights and obligations for States Parties (and functions for WHO) concerning prevention, surveillance and response; health measures applied by States to international travellers, aircraft, ships, ground vehicles and goods; and public health at international ports, airports and ground crossings. For more information, see http://www.who.int/csr/ihr/en/.

Based on the above considerations and the introduction of the extensively revised and updated International Health Regulations (2005) (WHO, 2005),[2] hereafter referred to as IHR (2005), WHO found it appropriate to revise the second edition of the *Guide to Hygiene and Sanitation in Aviation*.

1.2 Scope, purpose and objective

The third edition of the *Guide to Hygiene and Sanitation in Aviation* (hereafter referred to as "the Guide") addresses water, food, waste disposal, cleaning and disinfection of facilities, vector control and cargo safety, with the ultimate goal of assisting all types of airport and aircraft operators and all other responsible bodies in achieving high standards of hygiene and sanitation, to protect travellers and crews engaged in air transport. Each topic is addressed individually, with guidelines that provide procedures and quality specifications that are to be achieved.

The guidelines in this document apply to domestic and international air travel for all developed and developing countries.

[1] For further information, see the recently revised WHO guidelines for tuberculosis and air travel (WHO, 2008a).

[2] Whereas the IHR (2005) refer to the 194 States to which they apply (including all 193 WHO Member States) as "States Parties", for ease of reference, this document refers to these as either "States" or "countries".

Although aircraft and airport operators should have a plan to respond to deliberate acts that may threaten public health, this issue is not within the purview of the Guide. The Guide does not address cabin air quality at this time, as this issue is covered extensively elsewhere (WHO, 2008a, 2008b). Finally, the Guide will not address the epidemiological aspects of illnesses related to the topics covered.

1.3 Roles and responsibilities

In addition to the responsibilities of the individual stakeholders (aircraft and airport operators, ground service providers, etc.), several international bodies, such as the International Civil Aviation Organization (ICAO), the International Air Transport Association (IATA) and the Airports Council International (ACI), play an important role in protecting the health of passengers and crew.

Aircraft operators are involved at many levels in the chain of events that provide a hygienic and sanitary environment for air travellers and crew. For example, aircraft operators obtain potable water from numerous sources, and they have to ensure that each source provides drinking-water of acceptable quality. Water transfer is a key aspect of loading water onto the aircraft from the mains supply. The aircraft operator has the responsibility, in concert with the airport and relevant health authority, to ensure that proper transfer procedures are observed.

The safety of the potable water supply at the airport (including for provision to aircraft) is generally under the operational responsibility of the airport operator. The airport operator is generally subject to surveillance by the governmental authority responsible for regulating or licensing environmental health standards for facilities open for public use.

The airline has full responsibility for the management of water on board the aircraft; proper water system operation and maintenance procedures are essential to ensure that all of the intended potable water on board is safe. Cleaning of the aircraft water tanks at regular intervals is part of the aircraft maintenance process.

Airlines are responsible for the food they serve on board aircraft, whether it is prepared in an airline-owned “flight kitchen” or obtained from an independently owned catering company. The steps involved—including food preparation, transport to the aircraft, storage and, finally, serving on the aircraft—need to be well coordinated in order to avoid contamination.

Routine cleaning and disinfection are also important aspects of aircraft and airport operations. In addition, aircraft disinfection procedures following transport of a suspected case of communicable disease are a particularly difficult issue that needs to be addressed by many stakeholders in a cooperative approach; not all effective disinfectants are suitable for use on board aircraft, as they may cause corrosion or other damage to the aircraft structure and contents, or their fumes may be noxious to inhale in an unventilated space. WHO, IATA, aircraft manufacturers and ICAO are the main organizations involved in determining a suitable disinfection process at the international level.

Liquid and solid waste disposal is a shared responsibility of the airlines, the airport operators and the ground service providers. Under supervision of the health authority, they must use an effective system for the removal, transport and disposal of solid and liquid waste.

Human populations, livestock and crops must be protected against the spread of disease by insects and rodents that may be inadvertently transported by air. The range of responsibility for this aspect is wide and extends from the site selection of a future airport (away from mosquito breeding zones) to extermination of insects and rodents by airport and aircraft operators. The issue of aircraft disinsection is particularly controversial and will be covered in detail.

Cargo operations, especially with regard to animal transport and hazardous material, are an important concern mainly for aircraft operators. Ensuring compliance of the shippers and maintaining cleanliness of cargo areas are two of the main responsibilities of aircraft operators.

ICAO's primary role has been the prevention of aircraft accidents. However, in 2004, the Assembly of ICAO, its governing body, stated that the "protection of the health of passengers and crews on international flights is an integral element of safe air travel", and ICAO's activities in this area have since increased.

Aircraft and airport operators should cooperate with public health authorities in public health surveillance. Public health surveillance, defined as the ongoing, systematic collection, analysis and interpretation of data about specific environmental hazards, exposure to environmental hazards and health effects potentially related to exposure to environmental hazards, for use in the planning, implementation and evaluation of public health programmes, must be implemented in the aviation sector, including airports and aircraft. The purpose of conducting public health surveillance is to identify outbreaks of disease and other health issues and trace the cause or causes in order to control, and possibly even to eliminate or to eradicate, the health risks under surveillance. Public health surveillance that involves air travellers can be particularly challenging, as this population is exposed to many different potential sources of contagion, including fellow travellers, and it typically disperses quickly upon arrival at an airport. The cooperation of airport and aircraft operators in providing information to the public and to public health authorities is essential in these situations.

1.4 Structure of the *Guide to Hygiene and Sanitation in Aviation*

The Guide is structured into seven chapters:

- Chapter 1—Introduction
- Chapter 2—Water
- Chapter 3—Cleaning and Disinfection of Facilities
- Chapter 4—Food
- Chapter 5—Waste Disposal
- Chapter 6—Vector Control
- Chapter 7—Cargo.

Chapter 1, the Introduction, sets the Guide in its legal context, considering the IHR (2005) and describing the relationship between the Guide and other international documents. It also describes the roles, responsibilities and relationships among the relevant stakeholders.

Each of chapters 2–7 follows the same structural approach, consisting of two sections: "Background" and "Guidelines".

The "Background" section describes critical issues and supporting health evidence, as well as an overview of the public health significance of aircraft, both with respect to the specific topic of the chapter.

The "Guidelines" section in each chapter of the Guide provides user-targeted information and guidance applicable to the topic of the chapter, identifying responsibilities and providing examples of practices that can control risks. This section contains a number of specific **Guidelines** (situations to aim for and maintain), each of which is accompanied by a set of **Indicators** (measures for whether the guidelines are met) and **Guidance notes** (advice on applying the guidelines and indicators in practice, highlighting the most important aspects that need to be considered when setting priorities for action).

1.5 Importance of the modular approach

To properly manage the wide scope of this Guide, a "modular" (i.e. chapter by chapter) approach to its development has been adopted. The modular structure of the Guide will simplify subsequent updating as well.

This Guide includes the chapters on water and cleaning and disinfection of facilities. Future publications will include the remaining chapters.

1.6 Harmonization with the International Health Regulations (2005)

The purpose and scope of the IHR (2005) are to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks and that avoid unnecessary interference with international traffic and trade (Article 2).

Table 1.1 illustrates public health functions related to points of entry and the mechanisms behind the implementation of the IHR (2005), which are applicable to aviation as well as to other types of international transport.

Table 1.1. Public health functions related to points of entry and mechanisms of implementation of the IHR (2005)

Prevention	Early warning	Response
Containing known public health risks at ports, airports, ground crossings	Detecting public health risks/ events of potential international concern	Responding to public health emergencies
Routine control of sanitary conditions at points of entry and on conveyances (e.g. controlling vectors and reservoirs, goods, food, water, waste)	Inspection, entry and exit screening information and verification (e.g. verifying documents, such as the health part of the Aircraft General Declaration, and sanitary conditions on board)	Support to investigation and contingency plans to adopt control measures (e.g. assessment of and care for affected travellers, quarantine, isolation, contact tracing, disinfection)
Risk management	**Risk assessment**	**Event management**

Source: International Health Regulations Coordination, WHO Lyon Office, 2008.

The IHR (2005) are a legally binding agreement for all WHO Member States. Relevant aspects of IHR (2005) implementation include strengthening the use of scientific principles to prevent, detect, reduce or eliminate the sources of infection and contamination, to improve

sanitation in and around international ports, airports and ground crossings, to prevent the international dissemination of vectors and to mandate national and international actions to prevent the international spread of disease. The IHR (2005) also provide a framework within which international harmonization may be fostered and a reference for appropriate public health measures applied to conveyances and at international ports, airports and ground crossings.

The revision and update of the Guide support this function. The aim is to provide specific technical guidance on the application of the IHR (2005) to aviation, in the interest of providing safe drinking-water and food services to travellers as well as enabling sound hygiene and sanitation practices while mitigating infectious disease vectors.

1.7 Development of the *Guide to Hygiene and Sanitation in Aviation*

The Guide has been developed through an iterative series of drafting and peer review steps. These have included expert network meetings, the first being held in Geneva, Switzerland, on 7–8 June 2007, the second in Montreal, Canada, on 22–24 October 2007, and the third and last in Toronto, Canada, on 24–26 March 2008. Draft material was presented, and comments were captured and collated to reach a consensus on structure and content.

A complete list of contributors to the Guide can be found in the Acknowledgements section.

2. WATER

2.1 Background

Travel can facilitate the transfer of communicable disease. The volume and rapidity of travel can have an international impact on disease. This is particularly true for aircraft, as the global span of the aviation industry requires the loading and rapid transport of people and supplies from many locations all over the world. With the 21st-century potential for millions of people to have access to air travel on a global scale come the added problems encountered by aircraft operators that transit both into and out of disease-affected areas or areas with variable and sometimes inadequate standards of general hygiene and sanitation.

One risk is posed by the potential for microbial contamination of aircraft water by animal or human excreta. This contamination may originate from source waters or may occur during transfer operations or while water is stored on board the aircraft. Waterborne disease burdens in many parts of the world include cholera, enteric fevers (*Salmonella*), bacilliary and amoebic dysentery and other enteric infections. These diseases are not unique to water; food may actually be the dominant risk vector in some environments, and, in fact, most airlines have a good record with respect to known contamination incidents. However, any location is at risk if proper procedures and sanitation practices are not continuously followed to ensure the safety of water that is used for drinking and food processing and preparation.

2.1.1 Water supply and transfer chain

Even if the water at the airport is safe, that does not ensure that it will remain safe during the transfer to the aircraft and storage activities that follow. An understanding of the aircraft drinking-water supply and transfer chain will help to illustrate the points at which the water can become contaminated en route to the tap on board the aircraft.

Generally, the aircraft drinking-water supply and transfer chain consists of four major components:

1. the **source** of water coming into the airport;
2. the **airport** water system, which includes the on-site distribution system. It may also include treatment facilities if the airport produces its own potable water;
3. the **transfer point** (sometimes referred to as the watering point), including the water transfer and delivery system. It is typically a temporary interconnection between the hard-plumbed distribution system of the airport (e.g. at a hydrant) and the aircraft water system, by means of potable water vehicles and carts, refillable containers or hoses. This water transfer process provides multiple opportunities for the introduction of contaminants into the drinking-water;
4. the **aircraft water system**, which includes the water service panel, the filler neck of the aircraft finished water storage tank and all finished water storage tanks, including refillable containers/urns, piping, treatment equipment and plumbing fixtures within the aircraft that supply water to passengers or crew.

Figure 2.1 is a flow diagram of a typical aircraft potable water supply and transfer chain. It depicts the water path from potable water source to the aircraft's galley and lavatory taps serving passengers and crew.

Aircraft Potable Water Supply and Transfer Chain

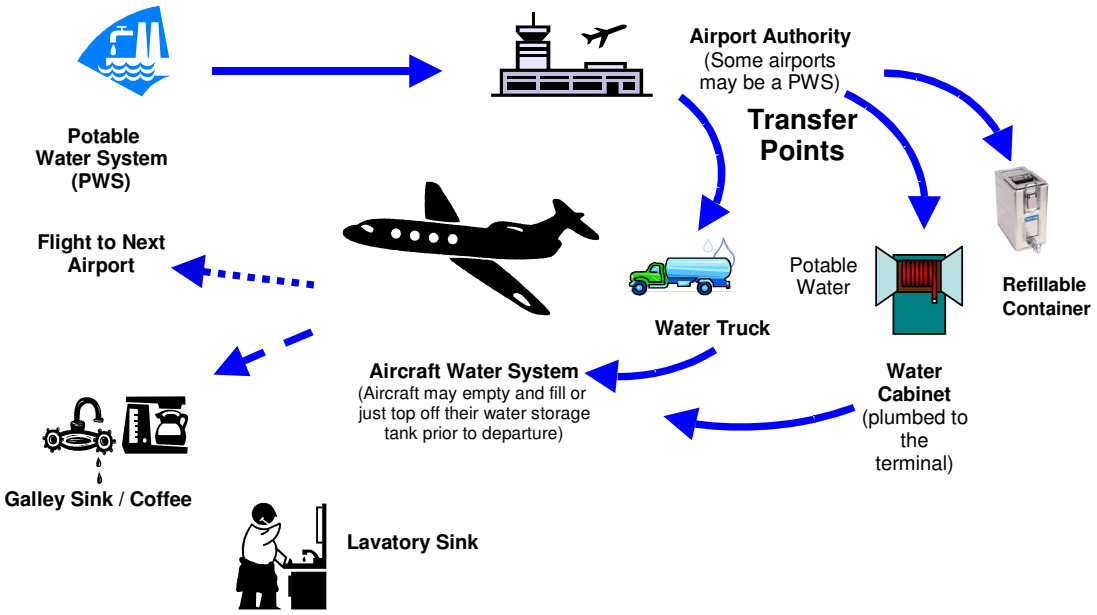


Figure 2.1. Aircraft potable water supply and transfer chain

2.1.2 Water requirements

The water storage capacity required for all purposes on board aircraft is based on the number of occupants (passengers and crew) and the duration of the flight, while being limited by weight, aircraft design and other practical considerations.

In practice, the capacity of aircraft water systems varies considerably. Examples of the potable water carrying capacities of different aircraft are given in Table 2.1.

Table 2.1. Approximate capacity of potable water tanks on select aircraft

Aircraft type	Number of tanks	Quantity per tank (litres)	Total quantity (litres)
A380	6	283.3 (option 377.7)	1700 (option 2266)
A340-500/600	3	356.7	1070
A340-200/300	2	350 (option 525)	700 (option 1050)
744 F/P	4	416.3	1665.2
744Combi	3	416.3	1248.9
MD11	4	238.4	953.6
777-200ER	3	412	1236
777-300ER	3	435	1305
A330	2	350	699
737-300/400/500	1	75.7/113.6/151.4[a]	75.7/113.6/151.4
737-600/700/800/900	1	75.7/113.6/151.4/189.25/227.1[a]	75.7/113.6/151.4/189.25/227.1
787	2	511	1022

[a] Individual size, location and capacity of each tank may vary due to customer preference and use on the aircraft.

2.1.3 Health risks associated with water on aircraft

2.1.3.1 Water quality

The importance of drinking-water as a vehicle for the transmission of infectious disease microorganisms in water supplies has been well documented in public and private water supplies.

The WHO *Guidelines for Drinking-water Quality* (WHO, 2004) (GDWQ) identify the broad spectrum of contaminants, including microorganisms, inorganic and synthetic organic chemicals, disinfection by-products and radionuclides, that can reach hazardous concentrations in potable water supplies and describe systematic approaches to risk management. As a general definition, safe drinking-water, as defined by the GDWQ, does not represent any significant risk to health over a lifetime of consumption, including different sensitivities that may occur between life stages.

The WHO *Guidelines for Drinking-water Quality* (GDWQ) (WHO, 2004) provide comprehensive guidance to ensure the quality and safety of drinking-water. Most of the concerns involving the safety of drinking-water on board aircraft focus on acute risks because of the short-term and limited exposure conditions. Thus, microbial risks are the principal concerns, although a few risks associated with acutely toxic chemicals also exist.

Significant microbial risks are associated with ingestion of water that is contaminated with human and animal excreta, although exposure through food preparation and direct human contact are probably more significant contributors to overall microbial disease risks.

Studies that highlight the aircraft water safety concern have been conducted by the United States Environmental Protection Agency (USEPA), Health Canada and the United Kingdom's Association of Port Health Authorities (APHA) (see Box 2.1). Total coliforms, *Escherichia coli*, *Pseudomonas aeruginosa*, enterococci and clostridia were detected in one or more studies. Most total coliforms are not pathogens per se, but a positive test is an indicator of inadequate sanitation practices; *E. coli* are indicative of recent faecal contamination, and some *E. coli* are human pathogens; *P. aeruginosa* are considered to be opportunistic pathogens, particularly from external contact with, for example, open wounds; enterococci are found in the intestines of warm-blooded animals, so they are indicators of faecal contamination; and *Clostridium* bacteria are found in the intestines of some humans and, more so, in dogs, which again points to faecal contamination (WHO, 2004).

Box 2.1. Studies on aircraft water safety

Random testing of water on aircraft by Health Canada in June 2006 found that 15.1% of the aircraft tested positive for total coliform bacteria and 1.2% tested positive for *E. coli*. Most contamination was found in water from lavatory taps or faucets, indicating the possibility of localized contamination rather than general water contamination (Health Canada, personal communication, 2008).

During a USEPA study conducted in 2004, 327 passenger aircraft were randomly tested at 12 airports that served both domestic and international routes. The USEPA analysed the drinking-water samples from galleys and lavatories for total coliforms (in the case of a positive result for total coliforms, the sample was tested for *E. coli*/faecal coliforms), total residual chlorine, heterotrophic plate count, and total nitrate and nitrite. In regard to the presence of microorganisms, 15% (49/327) of the aircraft tested positive for total coliforms in one or more sampling sites, and 4.1% (2/49) of these total coliform–positive aircraft also tested positive for *E. coli*/faecal coliforms. Twenty-one per cent of the aircraft tested had a non-detectable chlorine residual (USEPA, 2008).

The APHA study conducted in 1999 examined 850 samples of water from mains, bowser and aircraft sources from 13 airports in the United Kingdom. *Pseudomonas aeruginosa* was detected in 27% of all samples, total coliforms in 7.8%, *E. coli* in 0.4%, enterococci in 1.2% and sulfite-reducing clostridia in 0.4%. Of the samples with coliform contamination, 7.9% had contamination with faecal indicators, compared with 1.3% of samples without coliforms (APHA, personal communication, 2008).

There are no known reports of illness associated with drinking contaminated water on aircraft. Nevertheless, the potential for serious illness exists, particularly for those with compromised health (e.g. individuals with chronic illness).

The water quality guidelines directly applicable to water on aircraft focus on acute risks from contamination that may be incurred during transfer from the airport, through the transfer point or on board the aircraft. The focus on acute risks is because the exposure that would occur during a flight and be experienced by passengers and crew would be intermittent and of short duration (hours) rather than long term or lifetime, which is the basis for most of the guidelines in the GDWQ. Typically, the GDWQ assume the consumption of 2 litres of drinking-water per day by an average 60-kg adult for a lifetime (70 years), 1 litre per day for a 10-kg child and 0.75 litre per day for a 5-kg bottle-fed infant.

Besides microbial organisms, a few inorganic chemical substances, such as nitrate and nitrite (which can enter the source water from agricultural activity, sewage inflow or sewage cross-contamination in plumbed systems) and copper (which may leach into drinking-water from copper piping), may also be of health concern due to subpopulations that may be at risk from excess short-term exposures. For instance, methaemoglobinaemia may be caused by the temporary exposure of infants to nitrate and nitrite, among other contributing factors; and gastric irritation may result from short-term exposure to copper (WHO, 2004).

Potentially significant cumulative effects of repeated short-term exposures to chemical hazards should not be overlooked, as they may lead to long-term consequences.

2.1.3.2 Water quantity

An insufficient or non-existent quantity of potable water under pressure on board the aircraft for drinking, culinary purposes and personal hygiene can have an impact on the health and welfare of not only the passengers but also the crew.

There may not be enough water for the safe use of lavatories, which may lead to malfunctioning of some types of toilets, unpleasant odours, contaminated surfaces and an inability to wash hands. It may also lead to an inability to prepare or serve food in a sanitary manner, thereby impacting on the provision of safe food to passengers.

Adequate water intake during flight is also important to maintain health and well-being, although there is no need to drink more than usual (WHO, 2008b). The humidity in aircraft cabins gradually decreases on long-distance, high-altitude flights, sometimes reaching below 10% (optimum comfort is at approximately 50% humidity). While this low relative humidity does not cause central dehydration (Stroud et al., 1992; WHO, 2008b), it can cause discomfort for passengers and crew. Dry, itchy or irritated eyes, dry or stuffy nose, dry throat and skin dryness are among the most common complaints of cabin crew (Lee et al., 2000). Regular water intake and use of a skin moisturizer will minimize these symptoms, but it is possible that some individuals may become intolerant of contact lenses and have to revert to spectacle use.

The amount of water required for hand washing and other sanitation needs should be adequately dealt with in typical passenger aircraft designs.

2.1.4 Bottled water and ice

Bottled water is considered as drinking-water by some regulatory agencies and as a food by others (WHO, 2004). For many airlines, bottled water is the primary or exclusive source of water used for direct consumption on board aircraft, with the exception of hot beverages. International bottled water quality specifications exist under the Codex Alimentarius Commission (FAO/WHO, 2001) and are derived from the GDWQ. Since it is commonly designated as a food product, bottled water will not be considered further in this chapter, and the reader is referred to chapter 4 on food.

For the purposes of this Guide, ice supplied to aircraft for both drinking and cooling has been classified as "food". Guidance pertaining to ice used on aircraft is contained in chapter 4 on food. The GDWQ apply to both packaged water and ice intended for human consumption (WHO, 2004).

2.1.5 Uses of potable water on board aircraft

Potable water is used in a variety of ways on board commercial transport aircraft, including direct human consumption, food preparation and sanitation/hygiene activities. Potential uses include:

- preparation of hot and cold beverages, such as coffee, tea and powdered beverages;
- reconstitution of dehydrated foods, such as soups, noodles and infant formula;
- direct ingestion from cold water taps and water fountains;
- reconstitution and/or ingestion of medications;
- brushing of teeth in lavatories;
- hand washing in lavatories and galleys;
- cleaning of utensils and work areas;
- preparation of hot, moist towels for hand and face washing;
- direct face washing in lavatories;
- onboard showering facilities;
- emergency medical use.

Although some of these uses do not necessitate consumption, they involve human contact and possibly incidental ingestion (e.g. tooth brushing).

2.1.6 International Health Regulations (2005)

Annex 1 B 1 (d) of the IHR (2005) requires every airport specifically designated by a State to have or develop within a limited period the capacity to provide safe potable water supplies for travellers using airport facilities.

In accordance with Article 24 (c) of the IHR (2005), all States are required to take all practicable measures to ensure that international conveyance operators keep their conveyances free of sources of contamination and infection, which should include drinking-water. However, it is the responsibility of each aircraft operator to ensure that no sources of infection and contamination are found on board, including in the water system. For this purpose, it is important that these standards are being upheld on the aircraft, in terms of both

the quality of the water taken on board from the source of supply on the ground and maintenance of water quality on board.

For all States, their competent authorities are required to ensure, as far as practicable, that the facilities at international airports are in sanitary condition and kept free of sources of infection and contamination, as per Article 22 (b). This includes providing potable water from a uncontaminated source that should be approved by the competent authority.

2.1.7 Overview of water safety plans

Water safety plans (WSPs) are the most effective management approach for consistently ensuring the safety of a drinking-water supply. A potable water source at the airport is not a guarantee of safe water on board the aircraft, as the water may be contaminated during transfer to or storage or distribution in the aircraft. A WSP covering water management within airports from receipt of the water through to its transfer to the aircraft, complemented by measures (e.g. safe materials and good practices in design, construction, operation and maintenance of aircraft water systems) to ensure that water quality is maintained on the aircraft, provides a framework for water safety in aviation. A general overview of WSPs follows; their specific application to the safety of drinking-water on board aircraft will be described in section 2.2.

A WSP has three key components, which are guided by health-based targets and overseen through drinking-water supply chain surveillance. They are:

1. **system assessment**, which includes
   - description of the water supply system in order to determine whether the drinking-water supply chain (up to the point of consumption) as a whole can deliver water of a quality that meets health-based targets;
   - identification of hazards and evaluation of risks;
   - determination of control measures, reassessment and prioritization of risks;
   - development, implementation and maintenance of an improvement plan;
2. **operational monitoring**, which includes identification of control measures that will control hazards and risks and verification (to determine whether the system meets health-based targets);
3. **management and communication**, including preparation of management procedures and developing supporting programmes to manage people and processes (including upgrade and improvement).

The various steps involved in designing and implementing a WSP are illustrated in Figure 2.2.

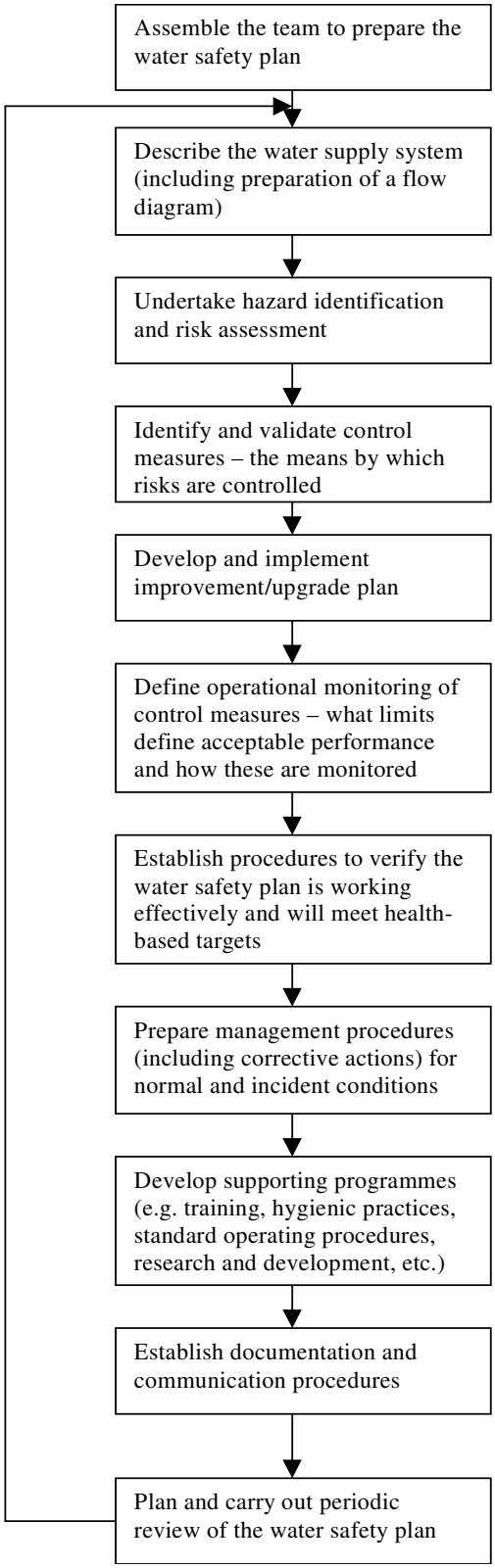


Figure 2.2. Application of water safety plans

For more information on general principles of WSPs, see section 6.7.1 of the GDWQ (WHO, 2004) and the *Water safety plan manual* (WHO, 2009).

2.1.8 Applicability of the GDWQ to the Guide to Hygiene and Sanitation in Aviation

The GDWQ describe reasonable minimum requirements for safe practices to protect the health of consumers and derive numerical guideline values for constituents of water or indicators of water quality. Neither the minimum requirements for safe practices nor the numerical guideline values are mandatory limits, but rather health-based guidance to national authorities to establish their own enforceable standards, which may also consider other factors. In order to define such limits, it is necessary to consider the GDWQ in the context of local or national environmental, social, economic and cultural conditions.

Nevertheless, given the global nature of air travel and the need for aircraft to board water from areas with variable and possibly inadequate standards of general hygiene and sanitation, the GDWQ or national standards should be followed, whichever are more stringent. This approach will provide passengers and crew with consistent reliable protection from the potential risks posed by contaminated drinking-water.

2.2 Guidelines

This section provides user-targeted information and guidance, identifying responsibilities and providing examples of practices that can control risks. Six specific **Guidelines** (situations to aim for and maintain) are presented, each of which is accompanied by a set of **Indicators** (measures for whether the guidelines are met) and **Guidance notes** (advice on applying the guidelines and indicators in practice, highlighting the most important aspects that need to be considered when setting priorities for action).

The guiding principle for this section is ensuring that water is safe for intended use. Five of the guidelines that fall under this principle deal with water quality, and one deals with water quantity.

Guidelines 2.2–2.5 can all be considered components under the umbrella Guideline 2.1. However, their importance in ensuring safe water quality in aviation warrants that they have additional detailed elaboration.

2.2.1 Guideline 2.1: Water safety plans

Guideline 2.1—Water safety plans are in place for each component of the water supply chain.

Indicators for Guideline 2.1

1. Design and implement a water safety plan for the airport water source.
2. Design and implement a water safety plan for the airport.
3. Design and implement a water safety plan for the transfer point.
4. Design and implement a water safety plan for the aircraft.

Guidance notes for Guideline 2.1

A WSP is an effective means of achieving consistency in ensuring the safety of a drinking-water supply. The entity responsible for each component of the drinking-water supply chain

(i.e. water source, airport, transfer point or aircraft) should also be responsible for the preparation and implementation of a WSP for that part of the process. General roles and responsibilities for each such component are as follows:

- **Source water supplier (public or private):** Role is to provide to the airport a safe water supply of sufficient quantity and quality. Responsibilities are to monitor the water system by sampling water and providing sampling results to the airport competent authority on request, advising the airport authority of any adverse results and action to be taken, and advising the airport authority when the water supply has or may become contaminated and of action taken.
- **Airport authority:** Role is to maintain the integrity of the water supplied and to provide safe water to the occupants, travellers, visitors, workers, water haulers and transfer points to the aircraft within the airport grounds. Responsibilities are to monitor the water system by sampling water and sharing sampling results with authorities and also stakeholders on request and to advise not only the water supplier but all concerned parties who use their water of any adverse results and corrective actions. In some circumstances, the airport may be both the source water supplier and provider of treated drinking-water.
- **Water haulers (transfer point):** Role is to provide water to the aircraft. Responsibilities are to maintain a safe water supply from the transfer point to the aircraft, to maintain the equipment in good working order, to monitor the water system by sampling water and sharing sampling results with stakeholders on request and to report adverse results and action to be taken to the aircraft operator and airport authority.
- **Aircraft operator:** Role is to provide a safe water supply to the passengers and crew for drinking, culinary purposes and personal hygiene. Responsibilities are to maintain their onboard water tank(s) clean and free of harmful microbial contamination, to monitor the water system by sampling water, to share sampling results with stakeholders, to report adverse results to the competent authority and take corrective actions, and, when and where required, to advise the crew and passengers of the adverse results.

The WSP for an airport source water supplier and drinking-water provider may be fairly detailed owing to the size and complexity of the facilities, whereas WSPs may be relatively basic for transfers and on board aircraft. The WSP should be reviewed and agreed upon with the authority responsible for protection of public health to ensure that it will deliver water of a quality consistent with the health-based targets.

WSP objectives are met through:

- development of an understanding of the specific system and its capability to supply water that meets health-based targets;
- identification of potential sources of contamination and how they can be controlled;
- validation of control measures employed to control hazards (see Figure 2.3 for examples of hazards);
- implementation of a system for monitoring the control measures within the water system;
- timely corrective actions to ensure that safe water is consistently supplied;
- verification of drinking-water quality to ensure that the WSP is being implemented correctly and is achieving the performance required to meet relevant national, regional and local water quality standards or objectives;
- provision (to include development, assessment and overall management, as necessary) of appropriate training for all personnel involved in installing, maintaining, operating and monitoring all components of the water supply and delivery chain identified in the WSP.

For more information on general principles of WSPs, see section 6.7 of the GDWQ (WHO, 2004) and the *Water safety plan manual* (WHO, 2009).

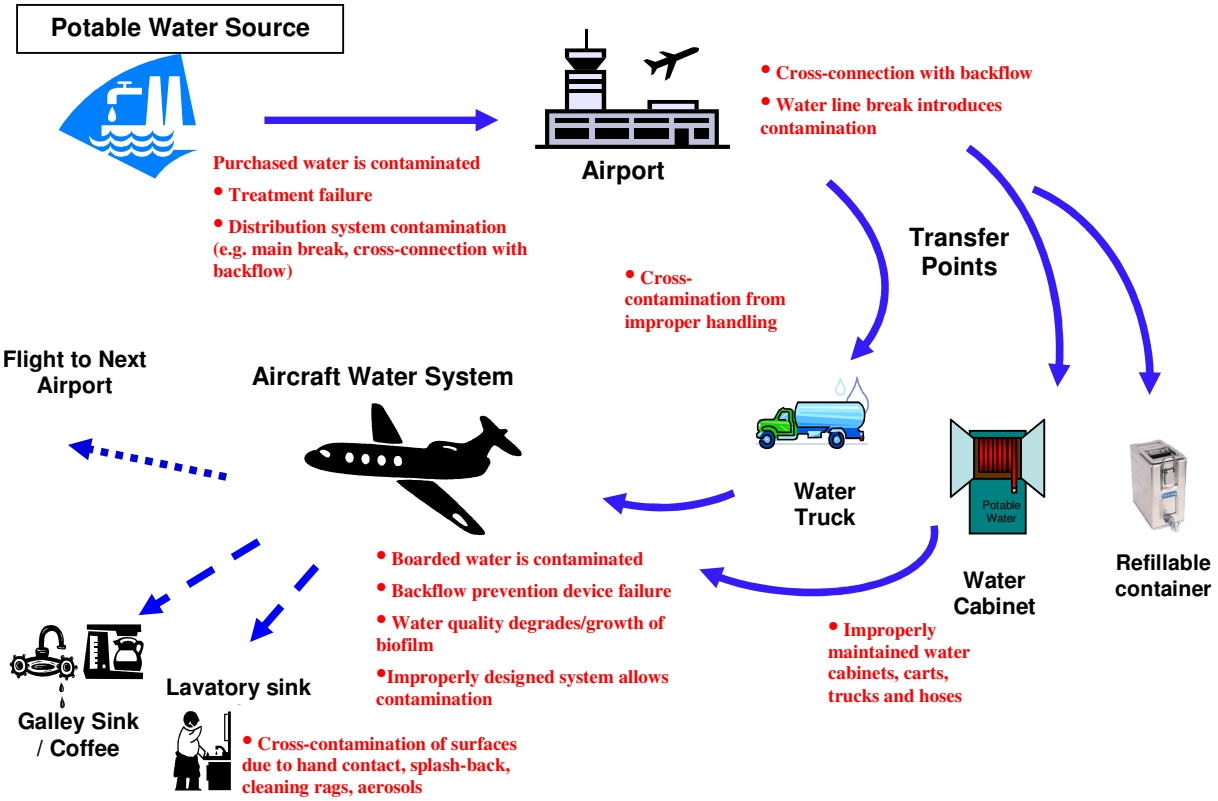


Figure 2.3. Examples of hazards in the aircraft potable water supply and transfer chain

1. Airport water source

Airports should be supplied with the safest water available from the water provider. The condition of the municipal supply source water provided to the airport should be known and controlled. Piped water supply delivered to airports should be obtained from well operated and maintained systems that conform to GDWQ or national standards monitored by competent authorities. If the water provided at the airport does not meet the GDWQ or national requirements, the airport will need to either utilize a higher-quality source or provide water treatment to meet those quality goals.

2. Airport

The airport authority has the responsibility to ensure the availability of a sufficient quantity of appropriate quality water. An airport may receive potable water from either a municipal/public or private supply, or the airport operator itself may be the water supplier responsible for producing the water that it uses. In the latter case, the airport would be almost identical to a public water supplier in its operations and responsibilities. The potable water is delivered to potable water cabinets, water trucks, carts, filling stations and airport buildings through the airport's distribution system. The delivery of the potable water to the aircraft is by designated filling hoses connected to the airport water system either directly or indirectly through water trucks and carts.

Improperly managed drinking-water can be an infectious disease transmission route at airports just as it is in municipal supplies. Most municipal waterborne outbreaks have involved ingestion of water contaminated with pathogens derived from human or animal excreta, which could be either from water that is supplied from the source or from contamination by cross-connection in the distribution system. The aircraft is a closed system, and post-loading contamination should not readily occur with a properly designed system. At an airport, the transfer procedure between the airport water system and the aircraft is another significant potential contamination opportunity.

Another possible cause of waterborne outbreaks is cross-contamination within the airport distribution system. Airports should ensure that water in the airport is potable through operational monitoring and should implement rigorous programmes to control cross-contamination during loading, distribution and treatment (e.g. having a cross-connection and backflow prevention programme).

Periodic self-audits or inspections should be carried out in addition to routine water quality measurements; these may differ in complexity from audits performed on the transfer point or aircraft. Corrective actions or procedures should be established and implemented should contamination be shown or if improper practices are suspected. Communication of this information to public health authorities and other affected individuals, such as persons served in the airport or those with responsibility over the water transfer points, is essential.

An example of a WSP for an airport can be found in Annex A.

3. Transfer point

The water transfer points between the airport source and the aircraft onboard storage and distribution system present significant opportunities for contamination. Common equipment used to transfer water includes (but is not limited to) piping, hoses, potable water cabinets, bowsers, tanks, filling stations, refillable urns and jugs, and hydrants (including taps/faucets). Equipment should be constructed of appropriate materials (e.g. corrosion-resistant materials) certified for this application, properly designed, operated, labelled and maintained, and used for no other purpose that might adversely affect the quality of the water. Assumptions and manufacturer specifications for each piece of equipment need to be validated to ensure that the equipment is effective.

Potable water should be obtained from those transfer points approved by the competent authority. The lines' capacity should be such as to maintain positive pressure at all times to reduce the risk of backflow. There should be no connections between the potable water system and other piping systems. Backflow of contaminated water into the potable water system needs to be prevented by proper installation of piping, backflow prevention devices and plumbing. Water for drinking and culinary use on aircraft should not be taken from water closets, washrooms or other places where danger of contamination exists or may develop.

Post-type or wall-type hydrants are preferred, but ground-level-type hydrants can be acceptable when necessary. Where hoses are used for loading potable water on aircraft, the hydrant outlet should have a type of coupling that will permit quick attachment and removal of the hose. For a hose permanently attached to the hydrant outlet, a threaded fitting will be acceptable. Outlets to all hydrants should terminate in a downward direction or gooseneck, except that ground-level-type hydrants may discharge horizontally. When the hydrant is of

the ground-level type or is located in a pit, precautions should be taken in the construction of the transfer point to ensure that drainage from the hydrant area and from the hydrant box are adequate to prevent flooding. In new servicing areas, hydrants with weep holes are not recommended. Hoses should have smooth interior surfaces, be free of cracks, be checked on a regular basis and be sufficiently durable to withstand hard usage. The nozzle on the end of the hose should be constructed so as to permit a tight connection with the filling connection of the aircraft and should be of a different size from that of any waste connections on the aircraft. All hose connections should be of the quick-coupling type, unless the hose is permanently attached to a water cart or hydrant. Water hose nozzles and the hose ends should not touch the ground or any contaminating materials, such as pools of water on the ground. Hose guard systems are designed in many forms. Guards, discs, balls or other devices, which will protect the nozzle end of the hose from contamination, should be provided and properly maintained. Valves at the filling end of such a hose should not be located on the nozzle side of the disc or protective device. The hose should be stored well away from wastewater equipment and on special reels or in lockers or cabinets that are used for no other purpose. Nozzles, fittings and linkages should be covered so as to avoid contamination. The hose should be flushed thoroughly before being used and periodically sanitized, and it should be immediately sanitized after any observed contamination from ground operations. Transfer procedures should be developed to ensure that contact with the ground and other contaminated surfaces is avoided.

The tanks should be designed so that they can be disinfected and flushed and should be provided with a drain that permits complete drainage of the tank. They should be labelled "DRINKING WATER ONLY". The inlet and outlet to the tank should terminate in a downward direction or gooseneck and should be provided with caps or closures with keeper chains for protection against contamination. The inlet and outlet should be equipped with couplings of a type that permits quick, easy attachment and removal of the hose. When hoses are transported on the water cart, storage facilities should be provided on the cart to protect the hoses from contamination.

Potable water provided in refillable urns or jugs for use at water transfer points between the airport source and the aircraft onboard storage and distribution system should meet relevant international standards. In such cases, the filling area should be dedicated for this purpose only and should be free of food manufacturing waste and by-products, general waste and cleaning agents and should be constructed and maintained in accordance with health regulations.

Appropriate personal hygiene for employees handling water at the transfer point cannot be overemphasized, and responsibilities for potable water transfer should be considered exclusive and separate from wastewater handling to avoid cross-contamination. Under no circumstances should employees be tasked simultaneously with both wastewater handling and potable water transfer. Other issues to consider include the development of transfer procedures to ensure that contact of hose nozzles with the ground and other contaminated surfaces is not permitted and procedures to ensure that water trucks and carts are not parked directly adjacent to sewage equipment.

The above lists of equipment and processes are by no means exhaustive. It is essential that, given the wide range of transfer equipment and processes, the WSP is informed by a fundamental understanding of the specific transfer processes obtained through hazard and risk analysis of each system and each type of aircraft and developing standard operating

procedures when appropriate (e.g. when coupling/decoupling from transfer point and aircraft). Periodic self-audits or inspections should be carried out and can complement routine water quality measurements; these may differ in complexity from audits performed on the airport or aircraft. Corrective actions or procedures should be established and implemented if contamination is shown or improper practices are suspected. Communication of this information to public health authorities and other affected individuals, such as those with responsibility over the aircraft, is essential (USFDA, 1995).

An example of a WSP for a transfer point can be found in Annex B.

4. Aircraft

If WSPs at the airport and transfer points have been developed and implemented correctly, the water provided to the aircraft should be of acceptable quality. If the available water being provided to the aircraft does not meet the GDWQ or national requirements, then the aircraft operator must take measures to ensure that water on board is safe. These may include, for example, a decision not to board water at that location or to obtain water from an alternative source, such as a contract provider.

Aircraft water systems include the water service panel, the filler neck of the aircraft water storage tank and all water tanks, refillable containers/urns, piping, treatment equipment and plumbing fixtures within the aircraft that supply water for use by passengers or crew. In modern aircraft, water is generally stored in tanks. These should be constructed of welded stainless steel or reinforced fibreglass. They feed, either by pressure or by gravity, all aircraft water outlets (i.e. hand-washing basins, galley taps, drinking fountains and water heaters). Tanks should be designed to drain completely. If the aircraft has only one tank or if several tanks are located together, there should be a single fill/overflow point; if, on the other hand, the tanks are located in different parts of the aircraft, each should have its own fill point. In all cases, the fill points should be separated from the toilet servicing panels to avoid cross-contamination. Drinking-water access points should be sited outside lavatories. If appropriate, the water should be cooled by passing through automatic coolers. All components in the water system should be corrosion resistant and suitable for use with hyperchlorinated water. On some aircraft, carbon filters are used to neutralize the chlorine in the drinking-water at the tap for taste purposes. On occasion, these are incorrectly described as purifying filters. If they are not serviced regularly, the cartridges may proliferate bacteria or even disintegrate. Also, once the chlorine content has been removed, the water has no protection against bacteria introduced downstream from the filter, and heterotrophic plate count (HPC) regrowth may also occur. Such filters should therefore be fitted at each water outlet. If desired, point-of-use treatment devices exist with the capability of removing, inactivating or killing microorganisms in drinking-water. Careful testing and selection are necessary to determine the appropriateness and performance characteristics of candidate devices. Point-of-use devices are intended not to replace disinfection of the bulk water, but to provide an extra safety measure, if it becomes necessary.

In some aircraft, potable water is stored in refillable urns or jugs or the aircraft tank supply is supplemented by an extra quantity in flasks. This practice is not recommended—particularly in the case of drinking-water—because of the great risk of contamination of flasks, since these are offloaded at all airports and may not always be properly disinfected before being refilled. However, in the case where refillable urns or jugs are used, suppliers of refillable urns or jugs installed as part of the aircraft onboard water storage and distribution system should meet appropriate international standards. Aircraft onboard water distribution systems

incorporating refillable urns or jugs should be maintained using the original manufacturer's guidance or approved bottle change/cleaning procedures.

Manufacturer specifications and assumptions for proper use of each piece of equipment should be validated to ensure that the equipment is effective. Periodic self-audits or inspections should be carried out and can complement routine water quality measurements; these may differ in complexity from audits performed on the airport or transfer point. Corrective actions or procedures should be established and implemented if and when contamination is shown or improper practices are suspected. Communication of this information to public health authorities and other affected individuals, such as passengers and crew on board the aircraft, is essential (USFDA, 1995).

An example of a WSP for an aircraft can be found in Annex C.

2.2.2 Guideline 2.2: Drinking-water quality standards

Guideline 2.2—All water on board aircraft intended for human contact meets GDWQ or national standards, whichever are more stringent.

Indicators for Guideline 2.2

1. *E. coli* or thermotolerant (faecal) coliforms are not detectable in any 100-ml sample.
2. A disinfectant residual is detectable in water samples at the airport, at the transfer point and on the aircraft.
3. All samples meet GDWQ or national standards for chemicals of acute significance or for chemicals with potentially significant cumulative effects from repeated short-term exposures.
4. Temperature, pH, ionic composition and alkalinity are controlled within appropriate ranges for the particular water type to minimize corrosivity and potential leaching of metals, such as copper, lead and iron.
5. Turbidity is monitored, and increases in turbidity are investigated to ensure that water has not been subjected to post-treatment contamination.
6. No undesirable tastes, colours or odours are present in the drinking-water.
7. All airport and aircraft hand-washing facilities supply potable, hot and cold running water or warm running water. Each drinking-water tap supplies running water at room temperature or colder. The temperature of the water is comfortable for its intended use, but not so scalding as to discourage use or inflict injury. Water pressure is sufficient for the intended purpose.

Guidance notes for Guideline 2.2

All of the water on the aircraft intended for drinking, food preparation or human contact should be potable and meet the GDWQ specifications or national standards, whichever are more stringent. Specific requirements applicable to water on aircraft are provided in Guideline 2.2. If the water provided at the airport, at the transfer point or on the aircraft does not meet the GDWQ or national requirements, the appropriate responsible entity must take measures to ensure that water on board will be safe. These may include, for example, providing water treatment, deciding not to board water at that location and/or obtaining water from an alternative source, such as a contract provider.

More detailed discussions can be found in the GDWQ (WHO, 2004).

1. *E. coli* or thermotolerant (faecal) coliforms

By far the greatest risks in drinking-water are associated with microbial contamination from human excreta sources. *Escherichia coli* or thermotolerant (faecal) coliforms are utilized as the indicators of potential contamination with pathogens associated with human excreta. Total coliforms are not necessarily indicators of faecal contamination, but may reflect lack of general cleanliness. *Escherichia coli* and thermotolerant (faecal) coliforms should be measured using generally accepted analytical techniques.

In some instances, local source water contamination may indicate the potential for presence of protozoan pathogens such as *Cryptosporidium* or viruses, whose presence may not be well indicated by *E. coli* or thermotolerant (faecal) coliforms and that require more stringent treatment. Based upon the findings of the WSP, additional controls and measurements may be necessary.

Heated water utilized for beverage and food preparation adds additional protection of pasteurization if the water is heated to sufficient temperatures for sufficient times. Some organisms, such as certain viruses, are more resistant and require more stringent conditions of time and temperature for inactivation, so water should be managed to ensure their absence.

2. Disinfectant residual

The presence of a measurable disinfectant residual in the water at the point of use provides valuable information that contributes to the assurance that the water is microbially safe for the intended use. First, it demonstrates that the water has been disinfected; then it indicates that some level of protection is being provided during transport and storage and that some control of bacterial growth is being provided. The most common disinfectant used is usually a form of chlorine; in that case, the residual could be free chlorine, hypochlorite or chloramine.

Chlorine disinfection of low-turbidity water with appropriate contact time and pH will control bacteria and viruses. However, some protozoa are resistant to chlorine disinfection, and their control requires other disinfectants or efficient filtration. If present, protozoa should be controlled by source water treatment (e.g. filtration or ultraviolet light for some organisms). The presence of the residual will be affected by the original dose, the disinfectant demand of the water, the type of disinfectant being utilized, the temperature, the time since application of the disinfectant and whether contamination has occurred since application of the disinfectant. A “free chlorine” residual is more biocidal than a “combined chlorine” residual, but combined chlorine will last longer and will suppress HPC regrowth. Disappearance of a free chlorine residual may also indicate post-treatment contamination. Other disinfectants, such as chlorine dioxide, are sometimes used; each has its strengths and weaknesses. Chlorine is a potent disinfectant, but its high chemical reactivity leads to a short life in the system. Chloramines are less potent disinfectants but are more stable in water for longer times. The disinfectant residual for chlorine should be no less than 0.2 mg/l and no more than 5 mg/l. As the concentration increases, the likelihood of taste detection increases.

3. Chemicals of acute significance

Because of the intermittent and short-term exposure to potential contaminants in drinking-water on board aircraft, the main concern, aside from microbial contamination, is associated with acutely toxic chemicals. A few inorganic chemical substances, such as nitrate and nitrite (which can enter the source water from agricultural activity, sewage inflow or sewage cross-contamination in plumbed systems) and copper (which may leach into drinking-water from

copper piping) may be of health concern to certain subpopulations. For instance, methaemoglobinaemia may be caused by the temporary exposure of infants to nitrate and nitrite, among other contributing factors; and gastric irritation may result from short-term exposure to copper (see also No. 4 below). Potentially significant cumulative effects of repeated short-term exposures to chemical hazards (for frequent flyers or crew members, for example) should not be overlooked, as they may lead to long-term consequences. Water on board aircraft should meet the GDWQ or national standards, whichever are more stringent, for such chemicals.

4. Corrosion-related contaminants

Corrosion in plumbing systems is a function of the stability and aggressiveness of the water towards the surfaces and fixtures that the water will contact during transport and storage. Metals such as copper, lead and iron can be leached from some materials into the water and contribute adverse taste or, in some cases, health concerns. Excess copper or iron can cause metallic taste; copper can cause gastrointestinal upset; excess lead can cause cognitive deficits from long-term high-level exposure in young children. The GDWQ guideline value for copper is 2 mg/l; iron can be detectable by taste at about 0.3 mg/l and above; and the lead guideline is 0.01 mg/l. In lieu of or in addition to monitoring for metals, appropriate management could be achieved through a corrosion control programme. The materials used in the construction of all of the surfaces (hoses, couplings, pipes, tanks, fixtures, soldered joints) that the water may contact during production, transfer and storage should be approved for water contact by an appropriate authority (regulatory or independent third party) and meet appropriate standards. The water that is being provided should not be corrosive to those surfaces and fixtures. Factors such as temperature, pH, ionic composition and alkalinity need to be controlled within appropriate ranges for the particular water type (see WHO, 2004).

5. Turbidity

Turbidity (cloudiness) is caused by light being diffused by particulate matter that may be present in the water. However, it may not be obvious just from visual observation. Turbidity present in groundwater is usually of no sanitary significance if it is caused by inorganic matter. It can also be caused by sloughing of biofilms. Excess turbidity in water from the treatment plant can be an indicator of insufficient water filtration or inadequate control of coagulant dosing and sedimentation, and it could indirectly indicate inadequate removal of filterable microorganisms. Disinfectants function more effectively in low-turbidity water because microorganisms are often aggregated on particles rather than freely suspended in the water. Turbidity may increase slightly during transit through pipes due to particle agitation. A turbidity increase in the aircraft water after transfer from the airport to the aircraft could indicate that foreign matter has entered the system during the transfer. The GDWQ do not set a health-related turbidity guideline but recommend 0.1 nephelometric turbidity unit (NTU) as a process performance parameter for effective disinfection (WHO, 2004). However, this value is for water leaving the treatment plant rather than for water in distribution.

6. Aesthetic parameters (odour/colour/taste)

Aesthetic parameters such as undesirable taste, colour or odour that appear after water treatment may be indicative of corrosion or cross-contamination, cross-connections, contamination by foreign substances during transfer to aircraft or inadequate plumbing conditions on board the aircraft. They signify the need to determine their cause and to take corrective actions so that the water on the aircraft is both potable and palatable.

7. Temperature
Cool water is generally more palatable than warm water, and temperature will impact on the acceptability of a number of other inorganic constituents that may affect taste. High water temperature enhances the growth of microorganisms and may increase taste, odour, colour and corrosion problems (WHO, 2004) (see also No. 4 above).

2.2.3 Guideline 2.3: Monitoring

Guideline 2.3—Critical water quality parameters are monitored.

Indicators for Guideline 2.3
1. Monitoring at airport water taps is carried out at locations to ensure that persons served by the airport are provided safe water. Recommended parameters that should be monitored at the entrance to the transfer point are *E. coli* or thermotolerant (faecal) coliforms, disinfectant residual, chemicals of acute significance, corrosion-related contaminants, turbidity and aesthetic parameters.
2. Monitoring at the transfer point takes place to ensure that water boarded on aircraft is safe. Recommended parameters that should be monitored at the transfer point to the aircraft (includes bowsers, trucks, carts, hoses, refillables) are *E. coli* or thermotolerant (faecal) coliforms, disinfectant residual and, if required, turbidity.
3. Monitoring on aircraft is carried out at locations to ensure that persons on board the aircraft are provided safe water. It is recommended that *E. coli* or thermotolerant (faecal) coliforms be monitored at representative taps (e.g. galley, lavatory, drinking fountains). The monitoring should take place at each major servicing, in addition to regular *E. coli* spot checks while in service. Complaints about aesthetic parameters (odour/colour/taste) will trigger further investigations into the water quality and may indicate the need to monitor for turbidity. Additional parameters to be monitored include chemicals of acute significance and corrosion-related contaminants. Disinfectant residuals are also measured after the aircraft has been disinfected and flushed.
4. All critical parameters are monitored at a sufficient frequency to ensure safe water.

Guidance notes for Guideline 2.3
In addition to the GDWQ or national standards applicable to a particular component of the water supply chain:

1. Monitoring at the airport
The piped water supply delivered to airports should be suitable for distribution and consumption without further treatment, except as necessary to maintain water quality in the distribution system (e.g. supplemental disinfection, addition of corrosion control chemicals). In the event of contamination of the water provided to the airport, the airport should complete corrective action and notify the party responsible for transfer of water to the aircraft as soon as possible so it can take mitigation measures or prevent the boarding of contaminated water on the aircraft. Documentation (recordkeeping) of monitoring should be kept for assurance and analysis in the event of an incident.

No *E. coli* or thermotolerant (faecal) coliforms should be detected in any 100-ml sample of the water. A positive test may be an indication of potential pathogenic (primarily bacterial) microorganisms associated with human excreta.

The presence of a measurable disinfectant residual contributes to assurance that the water is microbially safe for the intended use. The presence of the residual will be affected by the original dose, the disinfectant demand of the water, the type of disinfectant being utilized, the temperature, the time since application of the disinfectant and whether contamination has occurred since application of the disinfectant. Disappearance of a disinfectant residual may also indicate post-treatment contamination.

Provided that water entering the airport conforms to acceptable standards as described above, the principal concern for chemicals of acute significance would be nitrate/nitrite contamination at the airport from cross-connections with the liquid waste system and copper leaching.

Corrosion in plumbing systems is a function of the stability and aggressiveness of the water towards the surfaces and fixtures that the water will contact during transport and storage. Metals such as copper, lead and iron can be leached from some materials into the water and contribute adverse taste or, in some cases, health concerns.

Turbidity that increases in the airport could indicate that dirt has entered the system during the transfer.

Detection of aesthetic parameters (odour/colour/taste) may indicate cross-connections with the liquid waste system.

2. Monitoring at the transfer point

Potable water for aircraft, including bowsers, water trucks, water carts, filling stations and potable water cabinets, needs to be obtained only from those water sources and water supplies that provide potable water of a quality in line with the standards recommended in the GDWQ (WHO, 2004), especially in relation to microbial, chemical and physical requirements. In the event of contamination of water at the transfer point, the party responsible for transfer of water should notify the airline as soon as possible so it can take mitigation measures or prevent the boarding of contaminated water on the aircraft. Documentation (recordkeeping) of monitoring should be kept for assurance and analysis in the event of an incident.

No *E. coli* or thermotolerant (faecal) coliforms should be detected in any 100-ml sample of the water. A positive test may be an indication of potential pathogenic (primarily bacterial) microorganisms associated with human excreta.

The presence of a measurable disinfectant residual contributes to the microbial safety of water for the intended use. The presence of the residual will be affected by the original dose, the disinfectant demand of the water, the type of disinfectant being utilized, the temperature, the time since application of the disinfectant and whether subsequent contamination has occurred since application of the disinfectant. Disappearance of a disinfectant residual may also indicate post-treatment contamination.

Turbidity that increases in the aircraft water after transfer from the airport to the aircraft could indicate that dirt has entered the system during the transfer.

3. Monitoring on the aircraft

Potable water should be obtained from those transfer points approved by the competent authority. In the event of contamination of water on the aircraft, the airline should notify persons on board as soon as possible and take mitigation measures or arrange for an alternative water supply. Documentation (recordkeeping) of monitoring should be kept for assurance and analysis in the event of an incident.

No *E. coli* or thermotolerant (faecal) coliforms should be detected in any 100-ml sample of the water. A positive test may be an indication of potential pathogenic (primarily bacterial) microorganisms associated with human excreta.

Detection of aesthetic parameters (odour/colour/taste) may indicate cross-connections with the liquid waste system. On some aircraft, carbon filters are used to neutralize the chlorine in the drinking-water at the tap for taste purposes. On occasion, these are incorrectly described as purifying filters. If they are not serviced regularly, HPC growth will occur, and cartridges may disintegrate. Also, once the chlorine content has been removed, the water has no protection against bacteria introduced downstream from the filter. If used, such filters should therefore be fitted at each water outlet. Complaints about aesthetic parameters may indicate the need to monitor for turbidity or HPC and/or take corrective action. Turbidity that increases in the aircraft water after transfer from the airport to the aircraft could indicate that dirt has entered the system during the transfer.

The principal concern for acutely toxic chemicals in water on board the aircraft would be nitrate/nitrite contamination from cross-connections with the liquid waste system and copper leaching from the distribution system. Other metals, such as lead and iron, can also be leached from some materials into the water and contribute adverse taste or, in some cases, health concerns.

Disinfectant residual should also be measured after the aircraft has been disinfected and flushed as per the aircraft manufacturer's specifications with a test kit that is specific to the disinfectant and used as per the manufacturer's specifications. The disinfectant residual for chlorine (the most common disinfectant) should be no less than 0.2 mg/l and no more than 5 mg/l. Testing of the disinfectant residual should be done at the cold water faucet of galley(s), fountains and some lavatories and prior to the filters being reinserted, where applicable. Results should be recorded. Should the disinfectant residual be above 5 mg/l, the flushing process should be repeated and disinfectant residual remeasured and recorded. It should be noted that monitoring of water in lavatories may detect contamination from the surroundings rather than from the water per se.

4. Frequency of monitoring

Regular monitoring of each parameter is necessary to ensure that safe water quality is maintained, as each step in the water transfer chain provides an opportunity for contamination. Documentation (recordkeeping) of monitoring should be kept for assurance and analysis in the event of an incident.

In certain situations, the frequency of monitoring should be increased for a period necessary to determine appropriate corrective action and/or assurance that measured parameters have returned to safe levels. Examples of situations warranting increased monitoring are positive *E. coli* or thermotolerant (faecal) coliform results, excessively humid conditions, during or

after natural disasters affecting source water quality and immediately after maintenance activities that have the potential to affect water quality.

Aesthetic parameters such as odour, colour or taste are typically "measured" through customer complaints, although the crew may also wish to do an independent periodic check. This is a subjective parameter, as individuals have different sensitivities.

Some countries may request additional monitoring for parameters over and above those suggested by the GDWQ within their jurisdiction for operational or regulatory reasons. Airports, water haulers and aircraft operators should verify with their local competent authority if additional monitoring is required and what parameters the competent authority within their jurisdiction is requesting. These should be included in the WSP.

2.2.4 Guideline 2.4: Corrective action

Guideline 2.4—Appropriate response is ensured when the water safety plan is not properly implemented or a public health risk is detected.

Indicators for Guideline 2.4

1. Investigative action and response procedures are established and documented.
2. Investigative action and response procedures are implemented in a timely manner.
3. Follow-up is performed to ensure that corrective action was effective and water quality is no longer of concern.

Guidance notes for Guideline 2.4

1. Establishment and documentation of procedures

Investigative action and response could be as basic as reviewing records or could include more comprehensive corrective action. Corrective action should involve remedying any mechanical, operational or procedural defect in the water supply system that has led to guideline values being exceeded or when other improper practices are suspected. In the case of mechanical defects, remedies should include maintenance, upgrading or refurbishment of facilities. In the case of operational defects, actions should include changes to supplies and equipment. In the case of procedural defects, such as improper practices, standard operating procedures and training programmes should be evaluated and changed, and personnel should be retrained. Any such changes should be incorporated accordingly into the WSP.

When there is evidence of contamination, appropriate action should be taken immediately to eliminate the public health threat of such contamination. Appropriate action may include additional treatment or flushing and disinfection of transfer equipment or aircraft water tanks.

In addition, emergency/contingency actions may need to be taken, such as the provision of water from alternative sources. During periods when corrective action is being taken, increased monitoring may be advisable.

2. Implementation of procedures

Investigative action and response could be as basic as reviewing records or could include more comprehensive corrective action. Oversight should be provided to ensure that corrective actions are implemented in accordance with written procedures and quickly enough to

minimize exposure of the travelling public, employees, visitors, etc. Such oversight could be performed by the responsible party for that segment of the supply chain or by an independent party, such as a regulatory authority.

3. Verification of procedures
Verification steps should be adequate to provide assurance that water quality has been restored to safe levels. At a minimum, monitoring as described in Guideline 2.3 should be performed.

2.2.5 Guideline 2.5: Water quantity

Guideline 2.5—Potable water is available in sufficient quantities, pressures and temperatures for all uses at the airport, at the water transfer points and on the aircraft.

Indicators for Guideline 2.5
1. Potable water quantities at the airport are sufficient to ensure adequate pressure at all taps to minimize the potential for contamination.
2. Potable water quantities at transfer points are sufficient to ensure adequate pressure to minimize the potential for contamination and to replenish water supplies on board aircraft.
3. Potable water quantities on board aircraft are sufficient to meet foreseeable needs for consumption, cooking and cleaning (e.g. food preparation, sanitation and hygiene activities) and to achieve sufficient water pressure at each tap to minimize the potential for contamination.

Guidance notes for Guideline 2.5
The amount of water required for all purposes on board an aircraft should be adequately dealt with in typical passenger aircraft designs. Quantities of water at all points in the water supply and transfer chain also need to be sufficient to ensure adequate water pressure in order to minimize the potential for contamination.

1. Water quantity at the airport
To achieve minimum pressures, a variety of water pumps or air pressure is used, while pressure-reducing valves are used when the system pressure is too great for the application.

2. Water quantity at transfer points
To achieve minimum pressures, a variety of water pumps or air pressure is used, while pressure-reducing valves are used when the system pressure is too great for the application.

3. Water quantity on the aircraft
Water supplies on aircraft must be sufficient to operate sanitary systems on the aircraft (e.g. vacuum toilet bowl rinsing rings). Additionally, food service fixtures, coffee makers, drinking taps and hand-washing sinks in the lavatories must have sufficient supply under adequate pressure to operate as designed. Water supply tanks on aircraft must be correctly sized and pressurized for these systems to work and serve passengers and crew, and they must be filled with sufficient frequency that meets expected use.

Water at sufficient pressure is required to operate fixtures and equipment on the aircraft. Most fixtures are rated to operate at certain minimum/maximum pressures. To achieve minimum pressures, a variety of water pumps or air pressure is used, while pressure-reducing valves are used when the system pressure is too great for the application.

2.2.6 Guideline 2.6: Independent surveillance

Guideline 2.6—Independent surveillance of drinking-water safety is performed by a competent authority.

Indicators for Guideline 2.6

1. Audit/inspection procedures are put in place by a competent authority.
2. Documentation of a water safety plan and its implementation are reviewed, and feedback is provided.
3. An independent competent authority responds following reports of incidents with the potential to adversely affect public health.

Guidance notes for Guideline 2.6

Aviation water quality surveillance is an ongoing investigative activity undertaken to identify and evaluate potential health risks associated with the use and consumption of potable water in airports and on board aircraft. Surveillance contributes to the protection of public health by promoting the improvement of the quality, quantity, accessibility and continuity of potable water supplies. This guideline addresses surveillance of these factors only and does not address surveillance relating to monitoring of or response to outbreaks or other disease events (i.e. public health surveillance).

The levels of surveillance of drinking-water quality differ widely, just as economic development and provision of community water supplies vary. Surveillance should be developed and expanded progressively, by adapting the level to the local situation and economic resources, with gradual implementation, consolidation and development of the programme to the level ultimately desired. When accepting a WSP, the competent authority in a given jurisdiction may take responsibility for surveillance of the programme, which may include performing random water sampling and the auditing of the WSP programme.

Although this guideline addresses surveillance by oversight authorities, many of the concepts discussed here could be employed by the water supplier to ensure that the WSP is being implemented effectively.

1. Establishment of procedures

In most cases, surveillance consists primarily of sanitary inspections based on the WSP of airports, transfer points or airlines. Sanitary inspection is a tool for determining the state of the water supply infrastructure and the identification of actual or potential faults and should be carried out on a regular basis.

A surveillance agent should have the authority to conduct independent inspections and verify the reliability of the supplier's information. This does not normally need to be as frequent as the continuous control performed by airports/airlines.

Surveillance should be accomplished by authorized and trained officers from public health authorities, or the services of qualified independent auditors and inspectors may be utilized.

Specifications for qualifications of the inspectors should be established, and inspectors should undergo adequate training, including periodic updates and recertification. Independent auditors and inspectors should meet the same requirements as those from the public health authorities.

Annex D provides an example of a format that can be used by on-site inspectors in evaluating the sanitation status of the airline service area or transfer point. It can be adapted to specific circumstances and situations that may exist in various countries and airports.

2. Review of documentation and plan implementation

WSPs should be provided by the airport authority, water haulers (transfer points) and airlines, and all documentation pertaining to the WSPs should be reviewed. The independent review of the WSPs should include a systematic approach, based upon the components of the WSPs, by external auditing of the documentation, implementation and monitoring of critical control points.

Some of the components of the independent review include inspection of employee personal hygiene through demonstration of employees following procedures, inspections and the recording of these inspections of equipment and environmental conditions to ensure that dedicated equipment is used and stored in sanitary conditions, and water sampling through on-site or laboratory tests. Periodic microbiological surveillance of the entire water supply system from the source to the aircraft's galley and lavatory taps or fountains should be a key priority because of the acute risk to health posed by pathogens in contaminated drinking-water. Verification of compliance with water standards should start at the source and extend throughout the water distribution system. Each water point source, transfer point/critical point in the distribution system and end-point should be monitored. If this is not possible, at a minimum end-points should be monitored, but it should be possible to trace back when an unsatisfactory result is found.

Inspection of procedures or control systems should be adequate to provide assurance that responsible parties in the water supply chain are able to implement timely corrective measures. Supporting programmes should be reviewed to ensure that management procedures and training are adequate to ensure a safe supply of water.

Risk communication procedures by and to the water supplier, airport authority, water haulers (transfer points), airlines and the public should also be reviewed. A notification system should be established that integrates all parties within the water supply and transfer chain.

3. Response to incidents

Response to incidents may include written reports from the responsible party or parties or independent inspectors or written or verbal reports from affected individuals or their representatives.

The competent authority should investigate reports of incidents by interviewing reporters, responsible parties and other affected individuals and independently verifying water quality and relevant process parameters (maintenance checklists, training records, etc.) through on-site inspections and other means.

The competent authority should coordinate with and advise the responsible parties on appropriate corrective actions (modifications to water safety, management, training and maintenance plans, notification of potentially affected individuals, etc.) and ensure that remedial action plans are effective and implemented and that completion is verified.

3. CLEANING AND DISINFECTION OF FACILITIES

3.1 Background

This chapter covers cleaning and disinfection procedures for both airports and aircraft.

Cleaning refers primarily to the removal of visible dirt or particles; however, the cleaning process and some products used for cleaning also result in disinfection. Cleaning is normally undertaken on a routine and frequent basis. In this chapter, the primary process of removal of visible dirt and particles is referred to as "cleaning", even if some disinfection occurs at the same time.

Disinfection refers to specific measures taken to control, deactivate or kill infectious agents, such as viruses and bacteria. Disinfection is normally undertaken on an infrequent basis, during periodic maintenance checks or after a public health event, such as the suspected carriage of an infectious passenger. Disinfection is usually preceded by cleaning of the affected area, and this is assumed to occur when "disinfection" is referred to in this chapter.

In 2006, over 2 billion passengers were carried by airlines operating scheduled flights (ICAO, 2006). This fact indicates that commercial air transport is potentially an efficient means for spreading communicable disease widely by surface contact and proximity to infected persons.

Possible routes of infection transmission that might occur on board aircraft fall into three categories:
1. directly inhaled respiratory droplets, suspended airborne particles, or both;
2. direct contact with faecal matter, blood or other body fluids;
3. contact with respiratory secretions, faecal matter or body fluids deposited on surfaces or, for maintenance crews, entrained in ventilation systems.

The main source of infection for other travellers is from an infected person, and proximity to an infected person is an important risk factor for airborne infection. Once an infected person has left the scene, most of the risk from droplet exposure will have been removed. The residence time of suspended airborne particles may be longer and will depend on the particles' mass and on the ventilation rate/air circulation patterns in the cabin (ANSI/ASHRAE, 2008).

Airborne exposure aside, there is a concern that the agent of disease (pathogen) can remain in the airport or aircraft environment by contaminating common surfaces (e.g. fomites) after the infected traveller has departed. However, the guidance in this chapter is directed primarily at the second and third possible routes of transmission. The cause of illness for an individual traveller may not be known immediately and possibly not for some time afterwards; in many cases, the diagnosis may never be known. This guidance therefore adopts a "universal precaution" approach that treats all respiratory secretions, faeces, blood and other body fluids as potentially infectious.

Sometimes, a case of communicable disease is known only several days (or longer) after the infected person has travelled and may have deposited pathogens on surfaces in the airport or on the aircraft. The risk of infection upon contact with such contaminated surfaces will depend on the viability of the organism, the number of organisms, whether the surface has been properly cleaned and/or disinfected, whether the pathogen is touched and transferred

and also the susceptibility of the traveller. Frequent hand washing reduces the risk. As time passes and as a result of routine cleaning activities, the risk that any transmissible pathogens remain in place reduces, even without specific disinfection procedures.

There may be epidemiological information available to guide the public health response, such as an outbreak occurring at the origin of the flight (e.g. the 2003 episode of SARS). In such instances, public health experts recommend specific measures targeted at a particular pathogen.

To reduce the risk of transfer of pathogens from an infected person to others via surfaces or inanimate objects on the aircraft or in the airport, it is necessary for aircraft and airport operators and ground handling agents to have a coordinated plan in place to deal with the arrival of an affected[1] aircraft having carried such a traveller or the presence of a person with a communicable disease in the airport. For aircraft, the plan needs to take into account the unusual features of the aircraft cabin in comparison with a ground-based facility. For airports, the plan should address the challenge of managing potential contamination in a large public space, such as the terminal building. Such plans should also address potential contamination of an aircraft or airport with an infectious agent that is not transmitted person to person. Considering that it may be difficult to identify an aircraft carrying an infected person, the focus should be on (a) the assumption that all aircraft are periodically occupied by infected travellers and therefore require routine and frequent cleaning and disinfection and (b) the fact that certain events (e.g. persistent coughing on board) may increase the risk of disease transmission and that such incidents should be investigated so that, if a case of communicable disease is suspected, it leads to specific disinfection measures.

Disinfectants tend to be oxidizers, and the interior of an aircraft contains many materials susceptible to damage from cleaning products and disinfectants. Metals used in the construction of the aircraft may corrode upon exposure to such products, safety-critical cables and wires may deteriorate on exposure and aircraft furnishings may have their fire resistance properties reduced. It is therefore necessary to exercise caution in selecting suitable products and before applying these products in aircraft. It is important to protect the health of the cleaning personnel and to ensure effective action; therefore, manufacturer's instructions must be followed carefully.

It is essential to provide a hygienic environment for travellers. Areas where food is prepared, stored and served, any surfaces commonly touched by people and washroom facilities, among others, should be kept free from contaminants that might compromise human health, even when there is no identified outbreak of disease. Prevention or mitigation of disease transmission is the goal. Hygienic conditions also minimize the likelihood of infestation by rodents, as vectors of disease.

3.1.1 International Health Regulations (2005)

According to the IHR (2005), States (competent authorities) must ensure, to the extent practicable, that traveller facilities at their international airports and on aircraft are kept free of sources of infection and contamination. In addition, capacity to adopt control measures, such as cleaning and disinfection, should be in place, with oversight by the competent authority, to prevent the spread of disease and its agents at airports and on aircraft.

[1] An affected aircraft refers to one that carries sources of infection or contamination, so as to constitute a public health risk (see IHR (2005) Definitions). Aircraft affected due to criminal activity are outside the scope of the Guide.

If indications of a public health risk, including sources of infection and contamination, are found on board an international aircraft, the aircraft may be required to undergo health measures, such as disinfection, disinsection or decontamination, as appropriate, that are necessary to control risk and to prevent spread of disease (Article 27).

Health measures "shall be carried out so as to avoid injury and as far as possible discomfort to persons, or damage to the environment in a way which impacts on public health, or damage to baggage, cargo, containers, conveyances, goods or postal parcels" (Article 22) and "initiated and completed without delay, and applied in a transparent and non-discriminatory manner" (Article 42).

3.1.2 Critical aspects and rationale of cleaning and disinfection programmes

The critical aspects of cleaning and disinfection programmes include the availability of cleaning schedules and procedures for timely and effective airport and aircraft routine cleaning by designated personnel; procedures for disinfecting after an event; effective cleaning and disinfecting agents that are not detrimental to aircraft materials; appropriate personal protective equipment; and adequate training for designated personnel.

There are several reasons why cleaning and disinfection programmes are critical to ensuring a sanitary environment in airports and on aircraft, which, in turn, ensures that air travellers are exposed to minimum risk. Schedules and procedures for routine, effective airport and aircraft cleaning (and disinfection measures in higher-risk areas, when necessary) are vital in maintaining a hygienic environment. The availability of procedures for disinfecting after an event[1] is also critical, as body fluids, such as respiratory secretions, blood, vomit and faeces, may contain infectious agents that could be transmitted, if not properly contained.

Cleaning and disinfection on aircraft require special attention, as it is necessary to use agents that are not corrosive or otherwise detrimental to aircraft components. For this reason, not all effective cleaning and disinfecting agents can be used in the aircraft cabin.

Cleaning crews[2] need to be adequately trained so they understand and respect the procedures that will ensure effectiveness of the cleaning and disinfecting agents, use the proper personal protective equipment, prevent contamination of other areas and minimize occupational health and safety risks to personnel.

Unlike the routine procedure, post-event disinfection is not a frequent practice, and the requirements are likely to differ. It is therefore particularly important that the training emphasizes these "event-driven" procedures for the cleaning crew, because they will not be as familiar as routine cleaning procedures.

As noted above, competent authorities have responsibilities to ensure that international airports and aircraft are kept free of sources of infection and contamination (Article 22.1(a,b,c,d,e,g)). The competent authority needs to exercise oversight over cleaning and disinfection programmes so that its obligations under the IHR (2005) are fulfilled. Under the IHR (2005), the competent authorities are responsible for supervising service providers

[1] An "event" means a "manifestation of disease or an occurrence that creates a potential for disease" (IHR (2005), Article 1). This may include, for example, the presence in an airport, or carriage by air, of a suspected case of communicable disease.

[2] "Cleaning crew" refers to designated personnel that may undertake cleaning and/or disinfection.

relating to travellers, baggage, cargo, containers, conveyances and goods at points of entry, including with inspections and medical examinations, as necessary. They are also responsible for supervision of disinfection, disinsection and decontamination of conveyances, as well as baggage, cargo, containers and goods under the IHR (2005). Finally, they are responsible for the supervision of the removal and safe disposal of any contaminated water or food, human or animal dejecta, wastewater and any other contaminated matter from a conveyance (Article 22.1(c,e–f)). In the context of conveyances (as well as baggage, cargo and goods) arriving from affected areas, the competent authorities are responsible for monitoring them so that they are free of sources of infection or contamination (Article 22.1(a)).

3.2 Guidelines

This section provides user-targeted information and guidance, identifying responsibilities and providing examples of practices that can control risks. Six specific **Guidelines** (situations to aim for and maintain) are presented, each of which is accompanied by a set of **Indicators** (measures for whether the guidelines are met) and **Guidance notes** (advice on applying the guidelines and indicators in practice, highlighting the most important aspects that need to be considered when setting priorities for action).

3.2.1 Airports: Routine cleaning and disinfection

3.2.1.1 Guideline 3.1: Sanitary condition of airports

Guideline 3.1—Airports are kept in a sanitary condition at all times.

Indicators for Guideline 3.1

1. A documented, tested and updated routine cleaning programme exists, ensuring that premises are regularly and hygienically cleaned.
2. An appropriate number of trained personnel are available, in relation to the volume and complexity of the airport facilities and cleaning procedures.
3. Personal protective techniques and equipment are used by personnel: related equipment and information (operational procedures for its use) are available.
4. Cleaning equipment and supplies are available in relation to the volume and complexity of the airport facilities and cleaning procedures.
5. Cleaning equipment is properly identified and satisfactorily maintained and stored in a designated storage area.

Guidance notes for Guideline 3.1

Several aspects of routine cleaning should be taken into account:

- Programmes for routine cleaning should take into account the volume of passengers (e.g. peak periods, heavily used areas) and the complexity of activities at the airports (e.g. hair salons and spas, food establishments and washroom facilities) and personnel using the terminal and other facilities.
- Airport operators should be prepared to adjust their routine cleaning programmes if a public health risk is detected and/or if advised to do so by public health authorities.
- The routine cleaning programme should be conducted by, or be under the oversight of, the competent authority.

- During high-volume periods within the airport, increased frequency of cleaning should be considered to remove excessive accumulation of waste and debris resulting from the increased use of the airport facilities, especially washrooms.
- Precautionary cleaning, including the use of disinfectant products, of certain targeted areas of the airport may be advised if diseases of concern (e.g. norovirus or cholera) are prevalent in the airport community or at the departure points of a significant number of travellers.
- A routine cleaning programme should consider aspects that are specific to particular areas of an airport. Guidance can be found in Annex E.
- A routine cleaning programme should be periodically reviewed and updated, as needed.

3.2.1.2 Guideline 3.2: Design and construction of airports

Guideline 3.2—Airports are designed and constructed in a manner that facilitates proper cleaning and disinfection.

Indicator for Guideline 3.2

1. Facilities are designed and constructed of suitable materials (e.g. impervious, smooth and without seams) to facilitate cleaning and to reduce the risk of harbouring insects, rodents and other vectors.

Guidance notes for Guideline 3.2

Several aspects of airport design and construction should be taken into account:

- Proper design will minimize the amount of accumulated debris and waste and reduce opportunities for survival of vectors and reservoirs of disease, such as rodents and insects.
- Washrooms designed without doors and with automatic faucets (taps) using "electronic eyes" (which automatically control the flow of the water to the faucet) are preferable, as they will reduce contact with hands/fingers.
- Providing paper wipes for hand drying will reduce the risk of cross-contamination, especially when dispensed using "electronic eyes" (hand dryers can promote spread of pathogens).

3.2.2 Airports: Disinfection after an event

3.2.2.1 Guideline 3.3: Post-event disinfection procedures for airports

Guideline 3.3—Post-event disinfection procedures are in place to prevent the spread of disease and contain contamination at the source.

Indicators for Guideline 3.3

1. Standard operating procedures are documented and in place for timely disinfection after an event, according to technical requirements, and are subject to periodic revision based on emerging evidence of efficacy.
2. An appropriate number of trained personnel are available, in relation to the volume and complexity of the airport facilities and need for post-event cleaning/disinfection procedures.

3. Personal protective equipment and techniques are used by personnel, and related equipment and information (operational procedures for its use) are available.
4. Adequate equipment and supplies are available in relation to the volume and complexity of the airport facilities and disinfection procedures that may be needed after an event.
5. Disinfecting equipment is identified, properly maintained and stored in a designated storage area for post-event use.

Guidance notes for Guideline 3.3

1. Standard operating procedures

The disinfection procedure for flat surfaces (e.g. floors, tables, sinks) should be as follows:

- If required, control pedestrian traffic through the area by directing people away from the site, posting a sign or putting up barrier tape.
- Put on protective gloves.
- Wear eye protection if a danger from splashing exists.
- Prepare the sanitizing solution of bleach according to product specifications.
- Open a biohazard bag, and put it near the spill site. If a biohazard bag is not available, label the regular waste bag as "biohazard".
- Using paper towels or an absorbent material, clean up the soiled material and excess liquid and place into the biohazard bag.
- Change gloves if they become visibly soiled.
- Clean the area (remove solids and soak up liquid waste). Pour detergent solution around the spill site, and use paper towels to move the liquid into the dirty area. Once the area is wet, use the paper towels to clean the area and discard into the biohazard bag.
- Cover the site with clean paper towels, and pour the bleach solution onto the paper towels. Wait an appropriate time, as indicated in the product instructions.
- Remove the paper towels to the biohazard bag.
- Rinse with water, and dry the surface. Put all paper towels into the biohazard bag.
- Remove gloves, and place them into the biohazard bag.
- Seal used biohazard bag, and ensure proper transport and final disposal.
- Wash hands.

3. Personal protective equipment

Those responsible for cleaning up vomit, human excreta and other potentially infectious materials should protect themselves with appropriate personal protective equipment, such as gloves and protective clothing, according to standard operating procedures.

4. Equipment and supplies

The following materials should be preassembled in a spill cleanup kit:

- garbage bags and masking tape;
- disposable gloves;
- eye protection;
- mop;
- paper towel and/or absorbent material;
- detergent solution;
- water;
- sanitizing agent, such as bleach tablets (Presept, 0.5 g sodium dichloroisocyanurate tablets) or 5% domestic liquid bleach;
- signs, barrier tape (optional).

3.2.3 Aircraft: Routine cleaning and disinfection

3.2.3.1 Guideline 3.4: Sanitary condition of aircraft

Guideline 3.4—Aircraft are kept in a sanitary condition at all times.

Indicators for Guideline 3.4

1. A documented, tested and updated routine cleaning programme is available, ensuring that aircraft are regularly and hygienically cleaned.
2. An appropriate number of trained personnel are available, taking into account cleaning procedures, the type of aircraft (e.g. passenger or cargo), the aircraft size and the ground time (stopover time) of the aircraft.
3. Personal protective techniques and equipment are used by personnel, and related equipment and information (operational procedures for its use) are available.
4. Cleaning equipment and supplies are available, taking into account the type (e.g. passenger or cargo), size and ground time (stopover time) of aircraft and cleaning procedures.
5. For aircraft safety and to protect aircraft equipment, the operator's engineering department is consulted on cleaning procedures and agents used.

Guidance notes for Guideline 3.4

1. Routine cleaning programme

The following factors should be considered when designing a programme for routine cleaning:

- Programmes for routine cleaning should take into account the type (e.g. passenger or cargo), size and ground time (stopover time) of aircraft.
- An example of an aircraft routine cleaning schedule can be found in Annex F; the physical areas for which cleaning is specified in Annex F should be so included in the aircraft operator's cleaning programme.
- Aircraft operators should be prepared to adjust their routine cleaning programmes if a public health risk is detected and/or if advised to do so by public health authorities.
- Information concerning aircraft cleaning and disinfection should be available to those concerned, upon request.
- Precautionary cleaning of certain targeted areas of the aircraft, including the use of disinfectant products, may be advised by the public health authority if certain diseases of concern (e.g. norovirus or cholera) are prevalent at the departure points.

5. Cleaning procedures and agents

The operator's engineering department provides a technical review of each cleaning and disinfecting product used, based on manufacturer's recommendations (approved products are normally listed in the aircraft maintenance manual). The use of methods and materials recommended by the operator's engineering department should be mandatory, and public health authorities should consider the aviation aspects when developing specific national standards and technical guidance, to avoid safety-related issues.

3.2.3.2 Guideline 3.5: Design and construction of aircraft

Guideline 3.5—Aircraft are designed and constructed in a manner that facilitates proper cleaning and disinfection.

Indicator for Guideline 3.5

1. Aircraft interiors are designed and constructed of suitable materials (e.g. impervious, smooth and without seams) to facilitate cleaning and to reduce the risk of harbouring insects, rodents and other vectors.

Guidance notes for Guideline 3.5

1. Design and construction of aircraft interiors

Several aspects of aircraft design and construction should be taken into account:

- Proper design will minimize the amount of accumulation of debris and waste and reduce opportunities for survival of vectors and reservoirs of disease, such as rodents and insects.
- Lavatories designed with automatic faucets (taps) using "electronic eyes" (that automatically control the flow of the water to the faucet) will reduce contact with hands/fingers.
- Provide disposable paper wipes for hand drying to reduce the risk of cross-contamination.

3.2.4 Aircraft: Disinfection after an event

3.2.4.1 Guideline 3.6: Post-event disinfection procedures for aircraft

Guideline 3.6—Aircraft disinfection procedures are in place to prevent the spread of disease and contain infection and contamination at the source.

Indicators for Guideline 3.6

1. Standard operational procedures are documented and in place for timely application of disinfection procedures, according to technical requirements, and are subject to periodic revision based on emerging evidence of efficacy.
2. An appropriate number of trained personnel are available, taking into account the type (e.g. passenger or cargo), size and ground time (stopover time) of aircraft and disinfection procedures.
3. Personal protective equipment and techniques are used by personnel, and related equipment is available.
4. Disinfection equipment and supplies are available, taking into account the type (e.g. passenger or cargo), size and ground time (stopover time) of aircraft and disinfection procedures.

Guidance notes for Guideline 3.6

In general, routine cleaning of contaminated surfaces with soap or detergent and water (after use of a spill cleanup kit, if necessary) to remove soil and organic matter, followed by the proper use of disinfectants to inactivate any remaining organisms, constitutes effective environmental management of suspected agents. Reducing the number of infectious agents on a surface by these steps minimizes the chances of transferring them via contaminated hands. The agents that cause the communicable diseases of public health concern are susceptible to

inactivation by a number of chemical disinfectants readily available from consumer and commercial markets. However, care must be taken when using disinfectants on board aircraft because of the potentially harmful effects of such agents on aircraft components. The recommended attributes for post-event aircraft disinfectants are listed in Annex G.

Only disinfectants (including detergent/disinfectants) that are nationally approved for use on aircraft against any of the agents of concern *and* that have been approved by the original equipment (aircraft) manufacturer should be used.

Body fluids/substances (e.g. vomit from the ill traveller) should first be taken up from overtly contaminated surfaces by using an absorbent material, which should then be disposed of. Large areas contaminated with body fluids/substances (e.g. covering most of a tray table) should be treated with disinfectant after removal with absorbent material, then cleaned and given a final disinfection. Since disinfectants are not registered for use on porous surfaces, seat covers and carpeting with a significant contaminated area should be removed carefully, placed in a labelled, sealed plastic bag and laundered in accordance with the manufacturer's instructions, or they should be destroyed. In case of seat contamination that has penetrated the seat cover, the underlying seat upholstery may need to be removed for adequate disinfection.

1. Standard disinfection procedures

A disinfection procedure should include the following steps:

- Put on protective gloves.
- Wear eye protection if a danger from splashing exists.
- Open a biohazard bag, and place it near the site of contamination. If a biohazard bag is not available, label a regular waste bag as "biohazard".
- The following surfaces should be cleaned and then disinfected at the seat of the suspected case(s), adjacent seat(s) in the same row, adjacent row(s) and other areas, as noted below:
  - Seat area
    - armrests
    - seatbacks (the plastic and/or metal part)
    - tray tables
    - seatbelt latches
    - light and air controls, cabin crew call button and overhead compartment handles
    - adjacent walls and windows
    - individual video monitor
  - Lavatories
    - lavatory or lavatories used by the sick traveller: door handle, locking device, toilet seat, faucet (tap), washbasin, adjacent walls and counter.
- Clean the area of soil (remove solids and soak up liquid waste). Apply the disinfectant (see below) according to procedures approved by the original equipment manufacturer and as instructed on the disinfectant manufacturer's label. Once the area is wet, use paper towels to clean the area, and discard paper towels into the biohazard bag.
- Use a suitable disinfectant. Studies of hydrogen peroxide–based disinfectants containing additives such as surfactants and chelators have shown good results in scientific studies, and some industries already using these products are reporting excellent results. Ethanol has also been found to be an effective and suitable disinfectant for aircraft. However, other materials could be considered if they are approved or registered for surface disinfection and sanitization on aircraft by an appropriate government or independent organization.

- Ensure adequate contact time between the disinfectant and the surface for destruction of microorganisms. Adhere to any safety precautions as directed (e.g. ensure adequate ventilation in confined areas such as lavatories, and avoid splashing or generating unintended aerosols).
- Change gloves that become visibly soiled.
- Remove any affected portion of carpet.
- Rinse the surface with water, and dry. Put all paper towels into the biohazard bag.
- Remove gloves, and place them into the biohazard bag.
- Seal the used biohazard bag, and ensure its proper transport and final disposal.
- When cleaning and disinfecting are complete and gloves have been removed, immediately clean hands with soap and water or an alcohol-based hand rub. Avoid touching the face with gloved or unwashed hands.
- Do not use compressed air and/or water under pressure for cleaning, or any other methods that can cause splashing or might reaerosolize infectious material. Vacuum cleaners should be used only after proper disinfection has taken place.
- Operation of the aircraft's environmental control system at least until the suspect traveller has disembarked or until the disembarkation process is complete may also contribute to interrupting transmission of infectious material and should be performed if consistent with safety factors. Otherwise, ventilation should be provided from a ground source.

3. Personal protective equipment

Those responsible for cleaning up vomit, human excreta and other potentially infectious materials should protect themselves with appropriate personal protective equipment, such as gloves and protective clothing, according to standard operating procedure requirements.

4. Disinfection equipment and supplies

The following materials should be preassembled in a spill cleanup kit:

- biohazard bags; if a biohazard bag is not available, label the regular waste bag as "biohazard";
- disposable gloves (non-latex materials to avoid risk of allergic reaction can be considered);
- eye protection;
- paper towels;
- detergent solution;
- water;
- disinfectant;
- signs as necessary to isolate the area.

Note: For the duration of the flight, used airsickness bags should be stored in the waste bin of one lavatory. They should not be flushed down the toilet, and a notice to this effect should be placed in the lavatory. They should be removed from the aircraft by the toilet servicing team and disposed of along with the aircraft toilet wastes. If a specific receptacle is used on the aircraft for storage of used airsickness containers, it should be thoroughly cleaned, washed and disinfected after each use and treated in the same manner as portable toilet containers.

REFERENCES

ANSI/ASHRAE (2008). *ANSI/ASHRAE Standard 161-2007: Air quality within commercial aircraft*. Washington, DC, American National Standards Institute; Atlanta, GA, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

FAO/WHO (2001). *General standard for bottled/packaged drinking waters (other than natural mineral waters)*. Rome, Food and Agriculture Organization of the United Nations; Geneva, World Health Organization; Codex Alimentarius Commission (CODEX STAN 227-2001; http://www.codexalimentarius.net/web/more_info.jsp?id_sta=369).

ICAO (2006). *Annual report to the Council*. Montreal, Quebec, International Civil Aviation Organization (Document No. 9876).

Lee SC et al. (2000) *Questionnaire survey to evaluate the health and comfort of cabin crew. Air quality and comfort in airliner cabins*. West Conshohocken, PA, American Society for Testing and Materials.

McMullan R et al. (2007). Food-poisoning and commercial air travel. *Travel Medicine and Infectious Disease*, 5(5):276–286.

Peffers ASR et al. (1973). *Vibrio parahaemolyticus* gastroenteritis and international air travel. *Lancet*, 1(7795):143–145.

Stroud MA et al. (1992) *Physiological and psychological effects of 24-hour exposure to a low humidity environment.* Farnborough, Royal Air Force Institute of Aviation Medicine, May (IAM Report No. 705).

Turner AC (1971). Food poisoning. *Practitioner*, 206:615–621.

USEPA (2008). National Primary Drinking Water Regulations: Drinking water regulations for aircraft public water systems. Washington, DC, United States Environmental Protection Agency. *Federal Register*, 73(69):19320.

USFDA (1995). *Guide to inspections of interstate carriers and support facilities*. Washington, DC, United States Food and Drug Administration, Office of Regulatory Affairs (http://www.fda.gov/ora/inspect_ref/igs/icsf.html).

WHO (1960a). *Hygiene and sanitation in aviation: First report of the expert committee*. Geneva, World Health Organization (WHO Technical Report Series, No. 174).

WHO (1960b). *Guide to hygiene and sanitation in aviation*. Geneva, World Health Organization.

WHO (1969). *International Health Regulations (1969).* Geneva, World Health Organization (third annotated edition available at http://whqlibdoc.who.int/publications/1983/9241580070.pdf).

WHO (1977). *Guide to hygiene and sanitation in aviation*, 2nd ed. Geneva, World Health Organization (http://libdoc.who.int/hq/pre-wholis/a43045_(p1-p96).pdf and http://libdoc.who.int/hq/pre-wholis/a43045_(p97-p170).pdf).

WHO (2004). *Guidelines for drinking-water quality*, 3rd ed. Geneva, World Health Organization (http://www.who.int/water_sanitation_health/dwq/gdwq3rev/en/index.html).

WHO (2005). *International Health Regulations (2005).* Geneva, World Health Organization (http://www.who.int/csr/ihr/en/).

WHO (2008a). *Tuberculosis and air travel: Guidelines for prevention and control*, 3rd ed. Geneva, World Health Organization (http://www.who.int/tb/features_archive/aviation_guidelines/en/).

WHO (2008b). Mode of travel: Health considerations. In: *International travel and health*. Geneva, World Health Organization (http://www.who.int/ith/chapter_2a_2008.pdf).

WHO (2009). *Water safety plan manual: Step-by-step risk management for drinking-water suppliers*. Geneva, World Health Organization.

FURTHER READING

Some relevant supporting documents to the WHO *Guidelines for Drinking-water Quality* (in support of chapter 2 of this Guide) include the following:

Health Aspects of Plumbing
This publication describes the processes involved in the design, installation and maintenance of effective plumbing systems and recommends effective design and installation specifications as well as a model plumbing code of practice. It also examines microbial, chemical, physical and financial concerns associated with plumbing and outlines major risk management strategies that have been employed, as well as the importance of measures to conserve supplies of safe drinking-water.
Published in 2006 by WHO; available at:
http://www.who.int/water_sanitation_health/publications/plumbinghealthasp/en/

Safe Piped Water: Managing Microbial Water Quality in Piped Distribution Systems
The development of pressurized pipe networks for supplying drinking-water to individual dwellings, buildings and communal taps is an important component in the continuing development and health of many communities. This publication considers the introduction of microbial contaminants and growth of microorganisms in distribution networks and the practices that contribute to ensuring drinking-water safety in piped distribution systems.
Published in 2004 by WHO; available at:
http://www.who.int/water_sanitation_health/dwq/924156251X/en/

Water Safety Plans: Managing Drinking-water Quality from Catchment to Consumer
The improvement of water quality control strategies, in conjunction with improvements in excreta disposal and personal hygiene, can be expected to deliver substantial health gains in the population. This document provides information on improved strategies for the control and monitoring of drinking-water quality.
Published in 2005 by WHO; available at:
http://www.who.int/water_sanitation_health/dwq/wsp0506/en/

Water Treatment and Pathogen Control: Process Efficiency in Achieving Safe Drinking-water
This publication provides a critical analysis of the literature on removal and inactivation of pathogenic microbes in water to aid the water quality specialist and design engineer in making decisions regarding microbial water quality.
Published in 2004 by WHO; available at:
http://www.who.int/water_sanitation_health/dwq/watreatment/en/

Other published documents or documents in preparation may be found on the WHO Water, Sanitation and Hygiene web site at: http://www.who.int/water_sanitation_health/en/

ANNEX A: Example of a water safety plan for an airport

Water Safety Plan – Airport

1) Statement of goal(s)/objective(s)/purpose of WSP

2) Jurisdictional requirements to follow
   - Acts/statutes
   - Regulations
   - Standards
   - Guidelines

3) Organization
   - Define roles and responsibilities
     - Who has overall responsibility for WSP?
     - Who does what? What department/section is responsible for each part of the plan?
   - Define stakeholders – internal/external, and their roles and responsibilities within the plan
     - Water provider to airport – may be public or private
     - Airline operators
     - Water haulers
     - Airport food establishments
     - Responsible government authority
     - Who has responsibility/ownership of transfer points for aircraft, water haulers, etc.?

4) Operational plan
   - Planning, performing work, checking if work plan is working and continual assessment to improve the plan
     - Conduct a sanitary survey, including baseline sampling for chemical and physical parameters, etc.
     - Prepare and create documents for traceability; set up proper recordkeeping for all facets of the WSP, and review at least on an annual basis
     - Develop standard operating procedures
     - Follow industry best practices
     - Create an up-to-date inventory of all water outlet points within the airport; specify transfer points used by airlines and water haulers who supply water to aircraft
     - Define sampling parameters – e.g. *E. coli* or thermotolerant (faecal) coliforms, turbidity, disinfectant residual
     - Use acceptable methodology for sampling
     - Monitor water outlets and transfer points, and share information with stakeholders
     - Provide adequate training to employees – identify training required per position, document, develop checklist for training, etc.
     - Recordkeeping – using spreadsheets, developing database, retaining of records
     - Develop inspection and self-audit programmes and forms

5) Communication plan
   - Have a communication plan in place with identified stakeholders – who to contact – internal and external for incidents and events such as adverse results, natural disasters, construction work on the distribution system, etc.
     - Prepare a sampling strategy communiqué
     - Have a sampling results communiqué
     - Have a notification communication plan for adverse results (e.g. posting signs)
     - Have a water avoidance communiqué in case of natural disasters or events
     - Prepare an inventory of e-mail addresses, telephone numbers of stakeholders – internal/external for notification

6) Incident and emergency plan
   - Should be in place to respond to natural disasters, events or adverse results
     - Identify potential emergency situations, and have a written response plan
     - Train employees and test procedure on the response plan
     - Prepare emergency contact list – internal/external
     - Have a contingency plan to provide potable water

7) Corrective action
   - All corrective action should be documented, and the root causes should be identified

8) Documentation and processes/procedures review
   - All aspects of the WSP should be documented and reviewed at least annually by the person responsible or when there is a change in process, procedure, equipment, etc.

ANNEX B: Example of a water safety plan for a transfer point

Water Safety Plan – Water Haulers/Transfer (Watering) Points

1) Statement of goal(s)/objective(s)/purpose of WSP

2) Jurisdictional requirements to follow
   - Acts/statutes
   - Regulations
   - Standards
   - Guidelines

3) Organization
   - Defining roles and responsibilities
     - Who has overall responsibility for WSP?
     - Who does what? What department/section is responsible for each part of the plan?
   - Defining stakeholders – internal/external, and their roles and responsibilities within the plan
     - Airport authority
     - Airline operators
     - Water haulers – private and those owned and operated by airline
     - Responsible government authority
     - Who has responsibility/ownership of transfer points for aircraft, water haulers, etc.?

4) Operational plan
   - Planning, performing work, checking if work plan is working and continual assessment to improve the plan
     - Prepare and create documents for traceability; set up proper recordkeeping for all facets of the WSP, and review at least on an annual basis
     - Develop standard operating procedures (e.g. coupling/decoupling to aircraft, transfer point, good hygiene practices to follow)
     - Follow industry best practices
     - Create an up-to-date inventory of all transfer points used by airlines and water haulers who supply water to aircraft
     - Have contracts with private water haulers
     - Create an up-to-date inventory of equipment – trucks/carts, hoses, etc.
     - Keep maintenance records of equipment
     - Define sampling parameters (e.g. *E. coli*, turbidity, disinfectant residual)
     - Use acceptable methodology for sampling
     - Monitor transfer points, and share information with stakeholders
     - Provide adequate training to employees – identify training required per position, document, develop checklist for training, etc.
     - Recordkeeping – using spreadsheets, developing database, retaining of records
     - Develop inspection and self-audit programmes and forms

5) Communication plan
   - Have a communication plan in place with identified stakeholders – who to contact – internal and external for natural disasters, incidents and events such as adverse results, etc.
     - Prepare a sampling strategy communiqué
     - Have a sampling results communiqué
     - Have a notification communication plan for adverse results (e.g. aircraft and airport)
     - Prepare an inventory of e-mail addresses, telephone numbers of stakeholders – internal/external for notification

6) Incident and emergency plan
   - Should be in place to respond to natural disasters, events or adverse results
     - Identify potential emergency situations, and have a written response plan
     - Train employees and test procedure on the response plan
     - Prepare emergency contact list – internal/external
     - Have a contingency plan to provide potable water

7) Corrective action
   - All corrective action should be documented, and the root causes should be identified

8) Documentation and processes/procedures review
   - All aspects of the WSP should be documented and reviewed at least annually by the person responsible or when there is a change in process, procedure, equipment, etc.

ANNEX C: Example of a water safety plan for an aircraft

Water Safety Plan – Airlines

1) Statement of goal(s)/objective(s)/purpose of WSP

2) Jurisdictional requirements to follow
   - Acts/statutes
   - Regulations
   - Standards
   - Guidelines

3) Organization
   - Defining roles and responsibilities
     - Who has overall responsibility for WSP?
     - Who does what? What department/section is responsible for each part of the plan?
   - Defining stakeholders – internal/external, and their roles and responsibilities within the plan
     - Airport authority
     - Water haulers – private and those owned and operated by airline
     - Responsible government authority
     - Who has responsibility/ownership of transfer points for aircraft, water haulers, etc.?

4) Operational plan
   - Planning, performing work, checking if work plan is working and continual assessment to improve the plan
     - Prepare and create documents for traceability; set up proper recordkeeping for all facets of the WSP, and review at least on an annual basis
     - Develop standard operating procedures
     - Follow industry best practices
     - Create an up-to-date inventory of all transfer points used by airline and water haulers who supply water to aircraft
     - Where applicable, have contracts with private haulers and companies who perform aircraft disinfection
     - Create an up-to-date inventory of equipment – aircraft, trucks/carts, hoses, etc.
     - Prepare a disinfection schedule for equipment – aircraft, trucks/carts, hoses, etc.
     - Keep maintenance records of equipment
     - Define sampling parameters (e.g. *E. coli*, turbidity, disinfectant residual)
     - Use acceptable methodology for sampling
     - Monitor transfer points, and share information with stakeholders
     - Provide adequate training to employees – identify training required per position, document, develop checklist for training, etc.
     - Recordkeeping – using spreadsheets, developing database, retaining of records
     - Develop inspection and self-audit programmes and forms

5) Communication plan
   - Have a communication plan in place with identified stakeholders – who to contact – internal and external for natural disasters, incidents and events such as adverse results, etc.
     - Prepare a sampling strategy communiqué
     - Have a sampling results communiqué
     - Have a notification communication plan for adverse results (e.g. crew and passengers)
     - Prepare an inventory of e-mail addresses, telephone numbers of stakeholders – internal/external for notification

6) Incident and emergency plan
   - Should be in place to respond to natural disasters, events or adverse results
     - Identify potential emergency situations, and have a written response plan
     - Train employees and test procedure on the response plan
     - Prepare emergency contact list – internal/external
     - Have a contingency plan to provide potable water

7) Corrective action
   - All corrective action should be documented, and the root causes should be identified

8) Documentation and processes/procedures review
   - All aspects of the WSP should be documented and reviewed at least annually by the person responsible or when there is a change in process, procedure, equipment, etc.

ANNEX D: Example format for use by on-site inspectors in evaluating the sanitation status of the airline service area or transfer point

Transfer Point Inspection Form

Regulatory Authority			**INSPECTION SUMMARY -** **AIRLINE SERVICE AREA OR TRANSFER POINT SANITATION**		
NOTE: The items marked below identify deficiencies in operations or facilities that must be corrected within a reasonable time period or by such date as may be specified by the regulatory authority. Failure to comply with any time limits for correction specified in reference to this notice may result in cessation of acceptability of your operations, service or product for use on or by interstate conveyances.					
OWNER/OPERATOR AND ADDRESS			ESTABLISHMENT NAME		
			INSPECTION DATE		
CLASSIFICATION RECOMMENDED *(Check One)* □ APPROVED □ PROVISIONAL *(Expiration Date* _____ *)* □ NOT APPROVED					
REPORT PREPARED BY *(Name and Title)* **DEFICIENCIES ARE INDICATED BY AN "X", NOT OBSERVED BY AN "N", SATISFACTORY BY AN "S".**					
WATER PIPING SYSTEM			**DISPOSAL OF TOILET WASTES**		
1	No cross-connections*		34	Disposal facilities removed from food/drink servicing areas	
2	No backflow connections*		35	Sewage disposal satisfactory*	
3	Adequate pressure		36	Can- or tank-cleaning facilities completely enclosed, flyproof	
HYDRANTS			37	Smooth, impervious floors, sloped to drain	
4	Location satisfactory		38	Room clean, good repair	
5	Acceptable type, good maintenance		39	At least 138 kPa (20 psi) water pressure	
6	Acceptable uses only		40	Hot water or stream available	
7	Quick-type coupling (or threaded for permanent hose connection)		41	Suitable backflow preventer, properly installed*	
8	Outlets downward or horizontal		42	Soil cans emptied and cleaned after removal from aircraft	
9	Proper surface drainage		43	Carts emptied and flushed frequently	
10	Drains from hydrant boxes or pits adequate to prevent flooding*		44	Satisfactory storage of clean soil cans	
WATER HOSE			**HANDLING OF AIRCRAFT REFUSE**		
11	Satisfactory material, smooth, no cracks or checking		45	Refuse handled properly, no spillage	
12	Quick-type couplings, where required		46	Storage containers satisfactory, covered	
13	Satisfactory nozzle guard		47	Storage containers emptied frequently	
14	Hose properly protected and stored		48	Receptacles cleaned, not at soil can cleaning installations	

15	Hose handled properly, flushed before use		49	Receptacles stored properly, not with soil cans	
16	Nozzle different size or shape from waste connections		50	Airsickness containers properly handled and disposed of	
WATER TANKS OR TANK CARTS			**DISPOSAL OF REFUSE**		
17	Separate from toilet waste and sewage tank flushing carts		51	Refuse disposal satisfactory	
18	Smooth, heavy-gauge, corrosion-resistant material		**SANITATION FACILITIES FOR EMPLOYEES**		
19	Completely enclosed from filling inlet to discharge outlet		52	Adequate, convenient toilets, locker rooms and washrooms	
20	Vents, if provided, properly protected		53	Clean, good repair	
21	Complete drainage possible		54	Hand-washing facilities with soap, towels, adequate water	
22	Inlet and outlet directed downward		55	Hand-washing sign posted	
23	Inlet and outlet provided with caps or closures with keeper chains		56	Drinking-water, if provided, of safe quality and properly dispensed; no common cups*	
24	Water tanks labelled*				
25	Quick-type couplings, where required		**OTHER**		
26	If hose transported on cart, proper storage facilities provided		57	Nationally acceptable water supply as required*	
27	Proper transferral of water		58	Conveyance watering operations and procedures acceptable*	
	HANDLING OF TOILET WASTES		59	Conveyance waste removal operations and procedures acceptable*	
28	Personnel who remove wastes do not handle water or food				
29	Soil cans enclosed or covered during transportation to disposal area		60	Other critical areas*	
30	Waste tanks and flushing tanks labelled		61	Other non-critical areas	
31	Sewage removed without spillage				
32	Construction and maintenance of toilet waste carts satisfactory				
33	Equipment available for flushing aircraft sewage retention tanks (not by direct connection to water supply)*		OTHER COMPANIES SERVICED		
REMARKS					
*CRITICAL Items Requiring Immediate Attention.					

ANNEX E: Guidance for cleaning of public areas at an airport

Public areas and rooms

1. Post hand-washing signs to encourage good hand-washing practices among all staff and guests.
2. Use disposable paper wipes for cleaning to avoid the possibility of cross-contamination.
3. Use the proper chemical sanitizing agent, following the manufacturer's instructions concerning contact time.
4. Frequently clean and sanitize handrails, handles, telephones and any other hand contact areas, elevators and landings in all passenger corridors.
5. Frequently clean and sanitize all public rooms.
6. Clean carpets using a steam cleaner that achieves a minimum temperature of 71 °C unless the floor coverings are not heat tolerant (some carpets can be steamed only to 40 °C; otherwise shrinkage and colour runs may occur).
7. Frequently clean and sanitize garbage cans.
8. Clean and sanitize soft furnishings; steam clean if the items are heat tolerant.

Public restrooms

1. Post hand-washing signs to encourage good hand-washing practices among all staff and guests.
2. Frequently clean and sanitize door handles, toilet flushers, faucets, dryers, counters and any other hand contact areas.
3. Provide either an air dryer or disposable paper towels for hand-drying (only single-use cotton towels should be utilized).
4. Check levels of soap and paper towels.
5. Use disposable paper wipes for cleaning to avoid the possibility of cross-contamination.
6. Use the proper chemical sanitizing agent following the manufacturer's instructions concerning contact time.

Bars and lounges

1. Post hand-washing signs at each hand sink to encourage good hand-washing practices among all staff and guests.
2. Require staff to wash hands frequently.
3. Provide hand sanitizers to staff to complement good hand-washing practices.
4. Self-serve unpackaged items (e.g. peanuts, water) should not be available to guests.
5. Provide snacks on request, in small individual containers.
6. Frequently clean condiment containers that are served by staff (recommended to clean between each customer use).
7. Use disposable paper wipes for cleaning to avoid the possibility of cross-contamination.
8. Clean and sanitize all tables and chairs with a detergent solution and sanitizer (with correct contact time) after each shift and after closing.

Spas and salons

1. Post hand-washing signs to encourage good hand-washing practices among all staff and guests.
2. Require staff to wash hands frequently.
3. Use disposable paper wipes for cleaning to avoid the possibility of cross-contamination.
4. Use the proper chemical sanitizing agent following the manufacturer's instructions concerning contact time.

5. As per routine practices, ensure that common-use tools and materials are cleaned with detergent and sanitized after each use (e.g. combs should be kept in sanitizing solution that is regularly refreshed).

Fitness centres

1. Post hand-washing signs to encourage good hand-washing practices among all staff and guests.
2. Require staff to wash hands frequently.
3. Use disposable paper wipes for cleaning to avoid the possibility of cross-contamination.
4. Use the proper chemical sanitizing agent following the manufacturer's contact time.
5. Frequently clean and sanitize all surfaces.
6. Post signs to remind users to wipe down equipment with provided sanitizing spray after use.
7. Clean and sanitize equipment at least once during each shift.

Games rooms

1. Post hand-washing signs to encourage good hand-washing practices among all staff and guests.
2. Require staff to wash hands frequently.
3. Use disposable paper wipes for cleaning to avoid the possibility of cross-contamination.
4. Use the proper chemical sanitizing agent following the manufacturer's instructions concerning contact time.
5. Frequently clean and sanitize all surfaces.
6. Clean and sanitize equipment at least once during each shift, paying special attention to control sticks, handles, knobs and buttons.

ANNEX F: Routine aircraft cleaning schedule

The information provided in this annex is an example of a cleaning schedule for aircraft, written to assist those responsible for routine cleaning immediately after a flight or during a night stop. Although routine cleaning usually includes the use of disinfectants, as components of general-purpose aircraft cleaners, their routine application differs from that of an aircraft that needs disinfection after transporting a suspected case of communicable disease, for which separate guidance is provided in the text of chapter 3.

Cleaning and disinfection schedule

The aircraft operator's engineering department shall grant technical approval for each type of cleaning product used. Approved cleaning products are usually listed in the aircraft maintenance manual. Alternative cleaning products must be approved by the operator's engineering department prior to use.

1. General

1.1 Aircraft contamination

Should aircraft contamination be noticed (insects, liquids, etc.), inform the airline station manager. If an infective source is suspected, the source of infection (e.g. passenger) should be contained in order to minimize the risk of infection to others.

1.2 Handling of flight irregularities

The specifics of each flight irregularity situation will determine the course of action to be taken. However:

- Never compromise on safety.
- Coordinate actions taken with the airline station manager.

2. Interior cleaning

2.1 Classification of interior cleaning types

There are different types of interior cleaning, depending on time available; the following schedule is only an example, which may have to be adjusted to more specific operations. For operations having short flights, minimum service and short turnaround time, the requirement for cleaning between sectors is limited to very few of the procedures mentioned in the chart below.

2.2 Cabin cleaning

Cabin cleaning shall start immediately after passenger disembarkation is completed.

If transit passengers remain on board, cabin cleaning shall be performed so as to minimize passenger disturbance.

Cleaning of cabin windows inside shall be done only with an approved cleaning product and a non-abrasive cloth. Once the window is cleaned, rinse with water using a cloth and dry the surface.

Cloth-covered seats shall be vacuumed. Sticky objects shall be removed with a spatula prior to vacuuming. Stains shall be removed only with an approved stain removal product.

Leather-covered seats shall be cleaned using only an approved dusting product. Stains shall be removed only with an approved stain removal product.

Passenger seat control unit panels shall be cleaned using only approved cleaning materials and non-abrasive paper towels.

In-seat monitors shall be cleaned using only approved cleaning materials and a microfibre cloth.

Carpet stains shall be removed only with an approved stain removal product.

2.3 Interior cleaning chart

The following chart shows applicable cleaning and disinfection activities required for each type of interior cleaning.

"On request" cleaning activities shall be performed if requested by the operator flight crew, cabin crew or airline station manager.

Ashtrays require emptying and cleaning only if not permanently blocked.

Symbols: ✓ Standard ✦ On request

A: Stopover times under 60 minutes

B: Stopover times over 60 minutes

C: Overnight

Area	**Services**	**A**	**B**	**C**	**Remarks**
Flight deck	Empty waste boxes and ashtrays	✓	✓	✓	
	Clean crew tables and glass holders	✦	✓	✓	
	Clean stowage areas and racks	✦	✓	✓	B: As required
	Wipe seats	✦	✓	✓	Remove stains
	Clean floor / Vacuum carpet	✦	✦	✓	
	Clean flight deck windows inside	✦	✦	✓	
	Clean door and walls	✦	✦	✓	
Cabin	Dispose of waste from closets	✓	✓	✓	
	Dispose of litter and newspapers	✓	✓	✓	
	Dispose of waste in seat pockets		✓	✓	
	Collect and restow pillows and blankets (first, business class)	✓	✓	✓	Remove if soiled
	Fold and restow blankets in overhead bins	✓	✓		Remove if soiled
	Restow pillows in overhead bins	✓	✓		Remove if soiled

Symbols: ✓ Standard ✦ On request

A: Stopover times under 60 minutes

B: Stopover times over 60 minutes

C: Overnight

Area	Services	A	B	C	Remarks
	Empty ashtrays		✓	✓	
	Clean tray tables and armrests	✦	✦	✓	
	Clean cabin crew seat tables	✦	✦	✓	
	Clean interphone surfaces	✦	✓	✓	
	Clean cabin windows inside			✓	
	Vacuum passenger and cabin crew cloth-covered seats		✦	✓	Remove stains
	Wipe passenger and cabin crew leather-covered seats		✦	✓	Remove stains
	Dispose of waste in overhead bins and wipe		✦	✓	
	Clean overhead bins outside and latch handle surfaces	✦	✦	✓	
	Clean PVC floors			✓	A: As required
	Vacuum carpet		✦	✓	A: As required
	Empty and clean ashtrays			✓	
	Vacuum ashtray holders			✓	
	Collect and replace blankets			✓	
	Collect and replace pillows			✓	
	Collect and replace headrest covers			✓	
	Clean in-seat monitors			✓	
	Clean passenger seat/service control unit panels	✦	✦	✓	
	Remove passenger seat cushions and vacuum			✓	
	Remove stains from carpets			✓	
	Clean seat rails, cabin fixtures, air inlets, ceiling, sidewalls, closets, doors, service panels and magazine racks			✓	
Galleys	Empty waste bins and insert waste bags	✓	✓	✓	
	Clean doors, latches, ceiling, ventilation grids	✦	✦	✓	
	Clean sinks, faucets and working surfaces	✦	✓	✓	
	Clean retractable tables	✦	✓	✓	
	Clean ovens inside and outside	✦	✦	✓	
	Clean service trolleys	✦	✓	✓	
	Clean PVC floors	✦	✦	✓	
Lavatories	Empty waste bins and insert waste bags	✓	✓	✓	

Symbols: ✓ Standard ✦ On request

A: Stopover times under 60 minutes

B: Stopover times over 60 minutes

C: Overnight

Area	Services	A	B	C	Remarks
	Clean toilet bowl and seat	✓	✓	✓	
	Clean basin, faucets and surfaces	✓	✓	✓	
	Clean mirror	✓	✓	✓	
	Clean change table	✓	✓	✓	
	Clean wall surfaces and interior and exterior door handles and locks	✓	✓	✓	
	Clean PVC floors	✓	✓	✓	
	Replenish soap dispenser	✦	✓	✓	
	Replenish toiletry items	✦	✓	✓	
Crew rest areas	Dispose of waste from closets		✓	✓	
	Dispose of litter and newspapers		✓	✓	
	Remove sheets, pillows and blankets from each sleeping berth		✓	✓	This step followed by next two in sequence
	Clean surfaces within each sleeping berth		✓	✓	
	Place clean sheets on mattresses and clean pillows and blankets in each sleeping berth		✓	✓	
	Clean controls (for lights and ventilation, etc.) and interphone surfaces		✓	✓	
	Empty ashtrays		✓		
	Vacuum carpet				A: As required
	Clean any cabin crew seat tables		✓	✓	
	Clean any cabin windows inside		✓	✓	

If time does not permit completion of all of the above tasks, priority should be given to the removal of waste and cleaning where indicated, especially of galleys and toilets. To expedite cleaning procedures and to reduce the amount of equipment required, disposable swabs impregnated with effective and appropriate cleaning agents can be purchased or prepared in advance, stored in polyethylene bags and used for all wiping operations.

Galleys are extremely difficult to clean satisfactorily at times other than during maintenance checks, since they have many almost inaccessible areas in which foods and beverages—particularly the latter—can penetrate. The introduction of modules in wide-bodied aircraft is an improvement, but much more could be done to design a galley that would be easier to clean than the present type.

Problem areas

Aircraft cleaners need to pay particular attention to the following dirt traps and make sure that they are thoroughly cleaned out:

- catering equipment runners
- bar box recesses

- floor of catering container compartments
- sink drain pipes (frequently blocked)
- drinking-fountain wastes and bottle top remover recesses
- lavatory cupboards
- first-aid stowage holds.

ANNEX G: Recommended attributes for aircraft disinfectant

1) *Safety of active ingredients for humans*: In spite of best practices in the decontamination of environmental surfaces, human exposure to microbiocidal chemicals cannot be prevented altogether; this is particularly the case in confined spaces such as aircraft cabins. Therefore, formulations with the safest possible ingredients must be selected for such use, and proper ventilation should be provided.
2) *Environmental safety*: Chemicals used virtually anywhere eventually end up in the water environment, where they may prove unsafe for the ecology. Persistent chemicals can be particularly undesirable in this regard, as they tend to accumulate in the food-chain with the potential for long-term damage. In view of this, chemicals that can perform the task of decontamination when/where applied and then break down into harmless by-products are preferred.
3) *Spectrum of microbiocidal activity*: Cleaning alone provides some level of improvement and risk reduction. However, many commercially available disinfectants are active against easy-to-kill vegetative bacteria only, while several types of spores, viruses and fungi also have the potential to spread on environmental surfaces. Since in field settings the target pathogen is often unknown, chosen formulations should have demonstrated activity not only against bacteria, but also against viruses and fungi.
4) *Materials compatibility*: This is crucial when choosing disinfectants for decontamination of hard environmental surfaces in aircraft cabins. Any formulation selected for use in such settings must be safe for repeated applications and, as far as possible, must not reach other more sensitive and vital areas of the aircraft. Advice from the equipment manufacturer or aircraft operator's engineering department should be followed.
5) *Transport, storage and inventory control*: Ideally, one type of ready-to-use formulation can eliminate issues with inventory control and dealings with different manufacturers. The product to be selected must also be packaged for safe storage on board the aircraft.
6) *Directions for use*: The label directions must be as simple and easy to understand as possible to avoid misuse of the product.
7) *Speed of activity*: In most cases, the contact time between the targeted environmental surface and the applied product lasts from a few seconds to perhaps a minute or so. However, many commercial products sold for such use claim microbiocidal activity with a contact time of at least 10 minutes. This obvious disparity between label directions and actual field use has the potential to generate a false sense of security in the mind of the user. Further, the application of a relatively weak formulation for a shorter than recommended contact time could result in the spread of microbial contamination over a wider area during the wiping of environmental surfaces. Therefore, products that can achieve decontamination in as short a time as possible are preferred.
8) *Freedom from off-gassing and volatile organic chemicals (VOCs)*: Pungent odours are obviously undesirable, but addition of even strong scents/perfumes to disinfectants is now discouraged because of increasing numbers of individuals with multiple chemical allergies. Formulations that may release corrosive gases (e.g. chlorine) and VOCs must be avoided because of potential exposure of sensitive and vital components of the aircraft. Advice from the equipment manufacturer or aircraft operator's engineering department should be followed. Appropriate ventilation during cleaning is also important.

Travel Tips & News

How do airlines clean the planes?

by Katie Birtles 20 Jun 2020

Share on

As a new normal of enhanced hygiene procedures settles upon the world, airlines have stepped up to do their part to help keep travellers safe and stop the spread of the coronavirus. Many airlines have introduced extra precautions to keep their plane cabins as clean as possible, including HEPA air filters and deep sanitisation processes like 'fogging'. Read on to find out how airlines clean the planes, and how you can stay germ-free on your next flight.

The usual plane cleaning procedure

Before the COVID-19 pandemic hit the world, airlines would have different cleaning procedures for the aircraft, depending on the turnaround times between each flight. This usually involved wiping down surfaces with disinfectant, picking up rubbish and changing linens. International flights have a more detailed cleaning procedure since there's more time between flights to clean the cabin. American Airlines says their international aircraft receive a "detailed 30-point cleaning package each day".

Airlines also give the planes a deeper clean when they're finished flying each day. This includes wiping down trays, seats, overhead bins and toilets with high-grade disinfectants. American airline Southwest, says they spend more than six hours cleaning each aircraft every night, while most airlines remove aircraft from flight rosters every four to six weeks for a thorough scrub.

RELATED CONTENT: *6 airplane etiquette habits that are even more important right now*

How do airlines clean the planes after COVID-19?

Extra sanitising

In the wake of COVID-19, most airlines have adopted rigorous new cleaning procedures, with guidance from the World Health Organisation and government health advisories.

Australian airline Qantas, for instance, has introduced enhanced plane cleaning with a hospital-grade disinfectant effective against coronaviruses. They're focusing on high contact areas like seats, seatbelts, toilets, air vents and overhead lockers. Southwest Airlines says they disinfect all hard surfaces within the cabin, along with seat and carpet cleaning.

Hong Kong airline Cathay Pacific is taking extra precautions on their aircraft when there is a confirmed case of coronavirus. This includes disinfecting all surfaces, carpets and galley equipment, replacing all seat covers, detailed cleaning of the bathrooms, replacing air filters and sterilising the water system.

Cathay Pacific has also temporarily stopped providing pillows, blankets, hot towels and magazines on flights to and from mainland China. Qantas has echoed this move and temporarily reduced their food and beverage service and removed inflight entertainment on their domestic flights.

Many airlines are also offering passengers face masks, hand sanitiser and antibacterial wipes in-flight so you can wipe down your own area for extra peace of mind. Emirates, for instance, is providing a complimentary hygiene kit to passengers which include masks, gloves, antibacterial wipes and hand sanitiser.

RELATED CONTENT: *How to stay germ-free when travelling*

High-grade air filters

Most airlines including Qantas and all US airlines have their aircraft fitted with High-Efficiency Particulate Air filters, called HEPA filters. The filters remove 99.7% of airborne particles including viruses and hospital operating rooms use the same filtration system.

Many of the filters actually draw in new air from outside the plane. The systems completely replace the air in the cabin every two to five minutes, so you can be sure you won't be sitting in a tube of the stale air on your flight. In fact, your risk of catching an airborne disease on a plane is lower than in many other confined spaces thanks to the filters.

However, the real culprit is the extremely dry air in the cabin. The low humidity dries out your mucous passages in your nose, mouth and throat, making it easier to catch an airborne disease. You should drink as much water as possible and use a nasal spray to help your mucous passages stay moist.

Airplane fogging

Image credit: DeltaNewsHub / Wikimedia Commons

Ever wondered how clean is the airplane? You might have more peace of mind with this new cleaning method. Some airlines are rolling out a 'fogging' process on their aircraft. This means they spray a high-grade disinfectant through a fog machine which aerosolises the disinfectant and coats the air. The disinfectant sticks to all surfaces in the cabin as soon as it's applied. This includes the seats, trays, ceiling, floors, bathrooms, galleys and crew rest areas and it's highly effective in removing germs and bacteria, including coronaviruses.

Delta has been using a fogging process on flights arriving in the US from Asia since February. They've since extended the procedure to all trans-Pacific arrivals and flights from Italy to the US. United Airlines is also introducing a similar process on international flights arriving into its US hubs and Guam.

RELATED CONTENT: *How to prioritise your health and wellbeing on your next trip*

Cabin crew hygiene

Image credit: Austrian Airlines from Austria / Wikimedia Commons

Most airlines now require their flight attendants to wear medical-grade masks and gloves while serving passengers. They're taking extra precautions like giving passengers new cups for drink refills and removing hot towels.

They're also sanitising food service and galley equipment more often. United Airlines sanitises all their dishes, cutlery, glassware and tableware before they wash them. Delta and American Airlines sanitise all galley carts and disinfect linens and headphones separately. They also throw out any unused supplies after landing.

New technology

Image credit: DeltaNewsHub / Wikimedia Commons

Many airlines are using technology to help stop the spread of the coronavirus and keep their planes clean. Most airlines have introduced contactless check-in procedures and electronic boarding passes, while some are even introducing medical screening technology. Emirates has been conducting on-site COVID-19 testing for passengers, while Etihad Airways will trial self-service devices to screen for medical conditions.

As we navigate a new world in the wake of COVID-19, we can all take steps to help the airlines keep the planes clean. Always wash your hands, keep your physical distance and wear a face mask if you're sick. Most importantly, you should always stay home if you are feeling unwell.

Read Trafalgar's wellbeing and hygiene policy to understand what practices we are implementing on our trips to help give you peace of mind when you travel with us.

Your best trip starts here

Read Next

Subscribe

Be the First to Comment!

0 Comments

Sign up to our newsletter

Sign up to our newsletter and receive $250 of FREE Trafalgar travel credit

"*" indicates required fields

Name *

Name

Last Name *

Last Name

Email *

example@example.com

Region *

USA

I agree to the Terms & Conditions and Privacy Policy

Inspire Me

Follow us on

#SimplyTrafalgar

How to Care for Cleaning Tools and Equipment

Steve Hanson

XML

As a cleaning business owner, how many times have you walked into a janitor closet and found dirty tools and equipment, filthy mop buckets, vacuum cleaners that haven't been emptied, and spray bottles that no longer spray properly? Sure, we understand that cleaning is hard work. And after a long shift, cleaners just want to get home for some rest and relaxation. But one of the most important parts of their job is to keep the janitor closet clean, organized, and free of safety hazards.

It's also their job to make sure all cleaning tools and equipment are maintained and ready for use for the next shift. Ensuring that company tools and equipment are cared for and maintained correctly, makes for happy and safe cleaning technicians.

Do Your Cleaners Know How to Care for Tools/Equipment?

Caring for cleaning tools and equipment

We train our cleaning technicians to be efficient cleaners. We provide them with the processes, procedures, tools, and equipment to achieve this. Unfortunately, caring for tools and equipment can sometimes take a back seat.

Have you or your supervisors taken the time to train your employees on how to properly care for your tools and equipment? If not, it's time to initiate a program to keep tools and equipment operating at their peak performance and ready for the next cleaning crew.

Here is a checklist I developed for my employees to keep tools and equipment in top working condition:

Plastic Spray Bottles

- Wipe bottles as necessary to avoid residue and buildup.
- Replace label if any part becomes smeared or unreadable.
- Periodically take apart trigger and clean to avoid clogging.

Brute & Caddy

- Wipe down inside and out as needed.

Rags

- Do not leave lying around - they are a disease and safety hazard. Keep in a bag labeled dirty rags and do not mix with microfiber cloths.
- Discard greasy or oily rags.

Microfiber cloths

- Gather soiled microfiber cloths for laundering. Heavily soiled micro-fibers can scratch and damage surfaces.
- Do not wash microfiber cloths with other rags or fabrics; they can actually attract the dirt from other soiled materials if washed together.

Dust Pans

- Disinfect and wipe front edge as needed.

Brushes

- Rinse in clear, cold water, shake out excess. If brush is dirty, wash it out in lukewarm cleaning solution and rinse with clear water. Let dry with bristles straight.
- Storage - hang brush - do not put the brush weight on the bristles.

Brooms

- Do not use when wet, do not stand on its straws. Do not use brooms for scrubbing. Rotate frequently so they wear evenly.

Putty Knife

- After each day's use, wipe putty knife to remove moisture and debris.
- Store in clean, dry place.
- Edge the blade as needed to keep it sharp.

Measuring Cups

- Rinse with water immediately after use and wipe dry.

Dust Mops

- Do not use dry mops to pick up liquids. Do not use dust mops on oily floors.
- Remove loose soil frequently, using a vacuum cleaner if possible; otherwise shake into large waste receptacle.
- Never store a mop on the floor. Hang the mop so air can circulate.

Wet Mops

- Hang mops to dry in a light, airy place. Never store on the floor or in the mop bucket.

Microfiber Mops

- Microfiber flat mops should be collected for laundering after each use.
- Microfiber dry mops should be shaken or vacuumed first to remove any loose soil/dust before laundering.

Floor Finish Mops

- After using, wash out all floor finish or wax with clean water.
- Wring out as much water as possible, shake to fluff strands.
- Never use detergent or soap on a mop intended for floor finish.
- Put mop in a clean plastic bag after use.

Buckets & Wringers

- Do not use force on a wringer lever - use only enough hand pressure on the lever to wring out the mop.
- Remove any loose mop head yarn, string or foreign matter that becomes tangled in the wringer.
- Wash and scrub all surfaces of the bucket with disinfectant. Rinse with warm water and wipe dry.
- Keep wringer oiled and tight.
- Keep wringer in "release" position when it is not being used.
- Rinse blade in clean water after use.
- Wipe dry, do not store with blade down or bent.

Upright Vacuum

- Empty bag regularly.
- Wipe outside of vacuum after emptying.
- Check for strings, carpet yarns, etc. wrapped around beater bar.
- Check belt for cuts and change when needed.
- Empty magnet bar after each use.

Backpack Vacuum

- Empty bag regularly.
- Check and clean micro-filters as needed.
- Clean dome filter as needed.
- Clean exhaust diffuser filter (this can be done weekly or as required).
- Clean outside of vacuum.

High-Speed Buffers

- Wipe down entire surface after each day's use. Also wipe cord.
- Check pad for replacement.
- Blow out motor approximately every 2 weeks.
- Once per month check screws and bolts to ensure they are tight.

Slow Speed Machines

- Wipe down entire surface after each day's use. Also wipe cord.
- Rinse tank after each use.
- Check drive unit for cracks and wear.

Synthetic Floor Pads

- Floor pads can be used on both sides. Once both sides have been used, the pad should be set aside for cleaning or soaking.
- Floor pads can be cleaned by rubbing one against the surface of another. Or you can use a hand scratcher. Follow by rinsing with a sharp stream of hot water and giving a final rinse of cold water. Pads that do not respond to this method should be soaked overnight in a concentration of synthetic detergent or stripping solution. After soaking, each pad should be rinsed under a sharp stream of hot water. After a final rinse of cold water, the pads should be shaken and placed on a flat, non-rusting surface for drying. Pads are not ready for re-use until they are completely dry.
- Tip: When pads become excessively worn, they can be cut into small pieces or sections that can be used as hand or foot scratch pads.

Wet/Dry Vacs

- Rinse out inside, wipe inside and out after each use.
- Rinse and wipe hoses and attachments.

Carpet Machines

- Release pressure.
- Wipe outside.
- When empty, rinse out; spray water through sprayer to keep from getting plugged up.

Don't forget to inform your cleaning technicians how importance it is to properly care and maintain the company's cleaning tools and equipment. If done correctly and as required, production rates will increase and maintenance costs will go down and so will your expenses. It's a win-win all around.

In 2021, thejanitorialstore.com was part of an acquisition by Armando Bello, Ricardo Regalado, John Disselkamp, Michael Dahlke, Saul Marchan, and Juan Padilla. Comrades in the cleaning industry. Their goal is to continue to expand on the resources accessible to its members, provide a personalized roadmap for sustainable growth, and make a positive impact in the cleaning industry.

About Us -Vision - Mission - Story.

Employee and Management Training is more than just safety training. It should include all aspects of your company's processes and procedures. The care and maintenance of your company's cleaning tools and equipment should also be part of your training program.

Creating a learning culture in your organization will help you lay the foundation for building a high-performance team of employees. Companies that provide learning opportunities for employees and managers consistently produce the best results for their customers. Yet only 31% of organizations have a well-developed learning culture.

Our Premium membership includes access to Clean Smart University, which has **over 800 Workplace Safety Training Videos**!

TAKE A TOUR OF CLEAN SMART UNIVERSITY

Go Premium!

Premium Membership with access to Clean Smart University

Watch the video tour by clicking on the image below

Visit this page for a complete list of member benefits

Related Articles

- 11 Janitorial Safety Discussion Topics to Help Prevent Accidents & Injuries

The Janitorial Store
420 N Wabash Ave
Suite 507
Chicago, IL 60611

Tel: 866-862-8608

How to Care for Cleaning Tools and Equipment

Steve Hanson

XML

As a cleaning business owner, how many times have you walked into a janitor closet and found dirty tools and equipment, filthy mop buckets, vacuum cleaners that haven't been emptied, and spray bottles that no longer spray properly? Sure, we understand that cleaning is hard work. And after a long shift, cleaners just want to get home for some rest and relaxation. But one of the most important parts of their job is to keep the janitor closet clean, organized, and free of safety hazards.

It's also their job to make sure all cleaning tools and equipment are maintained and ready for use for the next shift. Ensuring that company tools and equipment are cared for and maintained correctly, makes for happy and safe cleaning technicians.

Do Your Cleaners Know How to Care for Tools/Equipment?

Caring for cleaning tools and equipment

We train our cleaning technicians to be efficient cleaners. We provide them with the processes, procedures, tools, and equipment to achieve this. Unfortunately, caring for tools and equipment can sometimes take a back seat.

Have you or your supervisors taken the time to train your employees on how to properly care for your tools and equipment? If not, it's time to initiate a program to keep tools and equipment operating at their peak performance and ready for the next cleaning crew.

Here is a checklist I developed for my employees to keep tools and equipment in top working condition:

Plastic Spray Bottles

- Wipe bottles as necessary to avoid residue and buildup.
- Replace label if any part becomes smeared or unreadable.
- Periodically take apart trigger and clean to avoid clogging.

Brute & Caddy

- Wipe down inside and out as needed.

Rags

- Do not leave lying around - they are a disease and safety hazard. Keep in a bag labeled dirty rags and do not mix with microfiber cloths.
- Discard greasy or oily rags.

Microfiber cloths

- Gather soiled microfiber cloths for laundering. Heavily soiled micro-fibers can scratch and damage surfaces.
- Do not wash microfiber cloths with other rags or fabrics; they can actually attract the dirt from other soiled materials if washed together.

Dust Pans

- Disinfect and wipe front edge as needed.

Brushes

- Rinse in clear, cold water, shake out excess. If brush is dirty, wash it out in lukewarm cleaning solution and rinse with clear water. Let dry with bristles straight.
- Storage - hang brush - do not put the brush weight on the bristles.

Brooms

- Do not use when wet, do not stand on its straws. Do not use brooms for scrubbing. Rotate frequently so they wear evenly.

Putty Knife

- After each day's use, wipe putty knife to remove moisture and debris.
- Store in clean, dry place.
- Edge the blade as needed to keep it sharp.

Measuring Cups

- Rinse with water immediately after use and wipe dry.

Dust Mops

- Do not use dry mops to pick up liquids. Do not use dust mops on oily floors.
- Remove loose soil frequently, using a vacuum cleaner if possible; otherwise shake into large waste receptacle.
- Never store a mop on the floor. Hang the mop so air can circulate.

Wet Mops

- Hang mops to dry in a light, airy place. Never store on the floor or in the mop bucket.

Microfiber Mops

- Microfiber flat mops should be collected for laundering after each use.
- Microfiber dry mops should be shaken or vacuumed first to remove any loose soil/dust before laundering.

Floor Finish Mops

- After using, wash out all floor finish or wax with clean water.
- Wring out as much water as possible, shake to fluff strands.
- Never use detergent or soap on a mop intended for floor finish.
- Put mop in a clean plastic bag after use.

Buckets & Wringers

- Do not use force on a wringer lever - use only enough hand pressure on the lever to wring out the mop.
- Remove any loose mop head yarn, string or foreign matter that becomes tangled in the wringer.
- Wash and scrub all surfaces of the bucket with disinfectant. Rinse with warm water and wipe dry.
- Keep wringer oiled and tight.
- Keep wringer in "release" position when it is not being used.
- Rinse blade in clean water after use.
- Wipe dry, do not store with blade down or bent.

Upright Vacuum

- Empty bag regularly.
- Wipe outside of vacuum after emptying.
- Check for strings, carpet yarns, etc. wrapped around beater bar.
- Check belt for cuts and change when needed.
- Empty magnet bar after each use.

Backpack Vacuum

- Empty bag regularly.
- Check and clean micro-filters as needed.
- Clean dome filter as needed.
- Clean exhaust diffuser filter (this can be done weekly or as required).
- Clean outside of vacuum.

High-Speed Buffers

- Wipe down entire surface after each day's use. Also wipe cord.
- Check pad for replacement.
- Blow out motor approximately every 2 weeks.
- Once per month check screws and bolts to ensure they are tight.

Slow Speed Machines

- Wipe down entire surface after each day's use. Also wipe cord.
- Rinse tank after each use.
- Check drive unit for cracks and wear.

Synthetic Floor Pads

- Floor pads can be used on both sides. Once both sides have been used, the pad should be set aside for cleaning or soaking.
- Floor pads can be cleaned by rubbing one against the surface of another. Or you can use a hand scratcher. Follow by rinsing with a sharp stream of hot water and giving a final rinse of cold water. Pads that do not respond to this method should be soaked overnight in a concentration of synthetic detergent or stripping solution. After soaking, each pad should be rinsed under a sharp stream of hot water. After a final rinse of cold water, the pads should be shaken and placed on a flat, non-rusting surface for drying. Pads are not ready for re-use until they are completely dry.
- Tip: When pads become excessively worn, they can be cut into small pieces or sections that can be used as hand or foot scratch pads.

Wet/Dry Vacs

- Rinse out inside, wipe inside and out after each use.
- Rinse and wipe hoses and attachments.

Carpet Machines

- Release pressure.
- Wipe outside.
- When empty, rinse out; spray water through sprayer to keep from getting plugged up.

Don't forget to inform your cleaning technicians how importance it is to properly care and maintain the company's cleaning tools and equipment. If done correctly and as required, production rates will increase and maintenance costs will go down and so will your expenses. It's a win-win all around.

In 2021, thejanitorialstore.com was part of an acquisition by Armando Bello, Ricardo Regalado, John Disselkamp, Michael Dahlke, Saul Marchan, and Juan Padilla. Comrades in the cleaning industry. Their goal is to continue to expand on the resources accessible to its members, provide a personalized roadmap for sustainable growth, and make a positive impact in the cleaning industry.

About Us -Vision - Mission - Story.

Employee and Management Training is more than just safety training. It should include all aspects of your company's processes and procedures. The care and maintenance of your company's cleaning tools and equipment should also be part of your training program.

Creating a learning culture in your organization will help you lay the foundation for building a high-performance team of employees. Companies that provide learning opportunities for employees and managers consistently produce the best results for their customers. Yet only 31% of organizations have a well-developed learning culture.

Our Premium membership includes access to Clean Smart University, which has **over 800 Workplace Safety Training Videos**!

TAKE A TOUR OF CLEAN SMART UNIVERSITY

Go Premium!

Premium Membership with access to Clean Smart University

Watch the video tour by clicking on the image below

Visit this page for a complete list of member benefits

Related Articles

- 11 Janitorial Safety Discussion Topics to Help Prevent Accidents & Injuries

The Janitorial Store
420 N Wabash Ave
Suite 507
Chicago, IL 60611

Tel: 866-862-8608

Previous Post Next Post

MOLLY MAID™
a neighborly company

10 STEPS ON HOW TO CLEAN A BATHROOM FAST AND EFFICIENTLY

Which room in the house do you least like cleaning? Bet you said the bathroom. Ridding showers, bathtubs, toilets and other surfaces of all sorts of buildup takes both time and elbow grease. Clean your bathrooms fast and efficiently by using this 10-step process.

1. **Remove all items from their usual spots.**
   For best results, do this step for the entire bathroom at once, instead of as you go. Remove all of your products from the shower and/or bathtub. Toss all used towels and rugs outside the room. Move any items from the counters outside the bathroom, as well. Don't forget to grab any trash cans.
2. **Dust and sweep.**
   To get rid of dust, grab your duster with a long handle to remove any cobwebs in corners, on light fixtures or in vents. If you still can't reach the cobwebs, pull in a stepladder to get up high. Once done, sweep or vacuum the floors to pick up hair and other debris that may have accumulated on the floors.
3. **Apply cleaner to shower and bathtub.**
   Apply an all-purpose cleaner if you clean regularly or an acid-based cleaner if you have serious buildup to your shower. Don't forget the shower track and inside the shower door, if applicable. Let it soak.
4. **Tackle other surfaces.**
   Spray the all-purpose cleaner on your cleaning device (i.e. microfiber cloth, sponge, etc.) and wipe down any towel racks, shelves, baseboards, doors, blinds and windowsills. Work in sections from the top of the room to the bottom, and left to right.
5. **Mix cleaning solution for floor.**
   Fill a bucket with warm water and the recommended amount of all-purpose cleaner.
6. **Hit the shower and bathtub.**
   At this point, the cleaner will have done much of the work for you, allowing you to lightly scrub away loose dirt and buildup. Get all walls, floors and other surfaces clean before rinsing.
7. **Finish the shower and bathtub.**
   Replace all items you removed, wiping them if necessary as you go, then close the shower curtain or door. If you do have a shower door, use glass cleaner to give it a streak-free finish.
8. **Clean the vanity area.**
   Spray the all-purpose cleaner on the sink, faucets and countertops, then wipe with a clean cloth. If you have buildup in the sink or in a soap dish, use a scrubby sponge to loosen before wiping clean. Use the glass cleaner on your mirror. A cloth dampened with water will remove dust from cabinet faces.

Categories

Free Time Fridays

Giving Back

Guides & Graphics

News

Seasonal

Tips & Tricks

9. **Clean the toilet.**
   If you scrub inside your toilet regularly, the all-purpose cleaner should get the job done. Spray or sprinkle a toilet-specific cleaner if buildup exists, then scrub with a toilet brush before flushing. Spray the outside of the toilet with the all-purpose cleaner, then wipe with a clean cloth.
10. **Mop the floor.**
    Submerge your mop into the bucket of cleaning solution, squeeze out excess water, then clean the bathroom floor. Once the floor is dry, replace the trash can and your freshly laundered rugs.

Best Way to Clean a Bathroom

The best way to clean a bathroom is by keeping it tidy between cleanings. While the above tips will help you clean your bathroom fast and efficiently, follow the tips below to keep it consistently clean:

Keep a hand-held vacuum in the bathroom for daily pickup of hair and other debris on the floor.
Install a hair-catcher in your drain to avoid buildup. When water doesn't drain as it should, it leaves behind an ugly ring around the shower or bathtub.
Squeegee shower walls after use to keep water marks at bay.
Keep smaller items in bins and baskets to avoid clutter creep.

How to Clean a Bathroom Floor

Of all the surfaces in the bathroom that require cleaning, the floor is one of the most important. The best way to clean a bathroom floor is by following these steps:

Archives

2022(25) +
2021(28) +
2020(26) +
2019(48) +
2018(50) +
2017(46) +
2016(54) +
2015(63) +
2014(62) +

Schedule Free Estimate
Apply Locally (Aplicar Localmente)
Enter Zip or Postal Code Request a Free Estimate
Click to Call
Gift Certificates
Apply Locally (Aplicar Localmente) Gift Certificates Franchise Opportunities
Cleaning Tips
FAQs
Our Services
Why Hire Us
About Us
Cleaning Tips
FAQs
Our Services
Regular Cleaning Occasional Cleaning Move Out Cleaning Service
Apartment Cleaning Special Events Housekeeping Cleaning
Move In Cleaning
Why Hire Us
The Professional Difference Custom Cleaning Affordable Cleaning
Molly Maid vs. Independent Providers Reviews Best Cleaning Service
About Us
Ms. Molly Foundress In the News Franchise Opportunities
Apply Now A Neighborly Company Contact National Office
Practically Spotless Gift Certificates
Cleaning Tips
General Household Bathrooms Kitchens
Living Rooms Kid's Rooms How to Save Time
Spring Cleaning Holiday Cleaning Bedrooms
Laundry Rooms Schedules, Charts and Checklists Office
Move In
FAQs
Before & After Home
Find A Location
Neighborly Done Right Promise®
9647
Do Not Sell My Info
Locations
Franchise Opportunities
Apply Locally/Aplicar Localmente
Franchise Owners Area
Site Search

Google

M

★★★★★ **Michael Thompson** 23 days ago

Did a wonderful job aniee stepane melane great people did a fantastic job would highly recommend them

via Google

★★★★★ **Holly Fox** 2 months ago

Tessa and Kelsy did a wonderful job with my move out clean!

via Google

J

★★★★★ **Janet Handerson** 3 months ago

Very happy with Brooklyn and Sarah.

Response from business owner

Thank you for your review, Janet! We're so happy you loved your home cleaning, and we can't wait to let Sarah and Brooklyn know :) We're looking forward to our next visit!

via Google

J

★★★★★ **Joe Pusateri** 3 months ago

Tessa and Bri did a great job and we're very efficient. House looks great!

Thanks girls!

Response from business owner

Thank you for your review, Joe! We're so happy you loved your home cleaning with Tessa and Bri :) We're looking forward to our next visit!

via Google

★★★★★ **Sally Herman** 3 months ago

Erin and her crew were simply amazing and did a great job, everything above expectation!!! It was incredible from cupboards to windows all sparkling clean! Howard Herman

Response from business owner

Thanks Sally!

via Google

★★★★★ **Katie Stout** 3 months ago

Sarah & Brooklyn did an amazing job and were very friendly.

Response from business owner

Thank you, Katie! Sarah and Brooklyn will be so happy you loved their clean. We're looking forward to our next visit :)

via Google

M

★★★★★ **Matt Natalie Houston** 4 months ago

Brooklyn and Sarah came by to clean my house as a mother's day gift from my husband. They did an absolutely amazing job and helped get our home back to normal after a hectic kidding and planting season on our farm. I am so incredibly ...

read more

Response from business owner

Thank you for taking the time to leave your review. We appreciate it so much, and we can't wait to tell Sarah and Brooklyn how much you loved their clean! :)

via Google

L

★★★★★ **Linda Bickel** 4 months ago

Team of three today.. Lexi, Nikki, and Brooklyn. Thorough, quick, reliable, respectable and friendly. Best part of the service is clean, shiny glass shower walls and streak free hardwood floors. Thank you for providing this service at ...

read more

Response from business owner

Thank you so much for taking the time to leave your review, Linda! You're such a great customer, and we're looking forward to our next visit! :)

via Google

HOW TO CLEAN A TOILET

Clean your toilet so it's fit for royalty. They do call it a "porcelain throne," after all! Follow these five steps for cleaning dirty toilet bowls to remove toilet rings, stains and funky smells – quickly and efficiently!

1. Begin by applying toilet cleaner to the bowl, and allow it to soak. If you're using vinegar in place of toilet cleaner, simply pour a cup into the bowl. Quickly swish the cleaner around the bowl with a brush.
2. While the cleaner soaks in, spray the exterior of the toilet with an all-purpose disinfectant. If the toilet is extra dirty, give it a preliminary wipe-down with paper towels and toss them in the trash.
3. Next, use a scrub sponge to clean the exterior of the toilet. Pay attention the base and floor around the toilet while you're there. If you have a modern toilet with a quick-disconnect toilet seat, remove the seat and clean it separately.
4. Once the exterior is clean, use a toilet brush to clean the bowl. If you have hard water rings or stains, use a pumice stone to remove these.
5. You know the area underneath the rim where water pours out? Since this is out of sight, many people don't scrub it. Don't ignore this area! Use your brush or sponge to clean the underside of the rim.

Best Way to Clean a Toilet

We get it. It's a toilet. Not many people enjoy cleaning toilets. But like most household care, cleaning your toilet regularly will make the process even easier next time. Regular toilet cleaning also eliminates harmful bacteria and ugly mineral or soil buildup. With more than 30 years of toilet scrubbing experience, Molly Maid pros have found that the best way to clean a toilet is fast and efficiently. To do that, always have the right supplies on hand.

Toilet Cleaning Supplies

Keep these supplies in a tote or bucket to separate them from the rest of your cleaning supplies. It's not a good idea to clean the sink with the toilet sponge or wash dishes with the same rubber gloves.

- Waterproof rubber gloves
- Scrub sponge
- Toilet cleaner or vinegar
- Toilet brush
- All-purpose disinfectant spray
- Cloth or towel
- Pumice stone
- Paper towels

Cleaning Your Toilet Water Tank

CLEANIN G TIPS

General Household
Bathrooms
Kitchens
Living Rooms
Kid's Rooms
How to Save Time
Spring Cleaning
Holiday Cleaning
Bedrooms
Laundry Rooms
Schedules, Charts and Checklists
Office
Move In

How to Clean the Different Glass Surfaces In Your Home

Glass is a modern material you easily take for granted. However, when it comes to cleaning your windows, mirrors and car windshields, those streaks and hard water spots are incredibly frustrating. Learn how to clean glass with the top techniques for a streak-free finish.

Tips to Get You Started

No matter what type of glass you're cleaning, follow these universal tips:

- Use soap and water, commercial glass cleaner, or a mixture of one part white vinegar and four parts water (preferably distilled water).
- Avoid cleaning glass in direct sunlight to avoid streaking.
- Start from the top of the window and work your way down. When washing windows of a multi-story home, start with the second-floor windows.

Annealed Glass

If your windows don't have any special coatings or technology, you probably have annealed glass. Window made from this type of glass shatter into large pieces when broken.

Fortunately, annealed glass is easy to clean:

- Heavily soak the window with soap and water or glass cleaner.
- Gently scrub areas with stuck-on debris or scrape the hardy glass with a razor blade.
- Remove soap and water from the glass with a squeegee.
- Follow up with a microfiber towel to thoroughly dry the window.

Heat-Strengthened Glass

Harder than annealed glass, heat-strengthened glass can withstand rapid temperature swings. When it breaks, it shatters into smaller pieces than annealed glass.

To clean heat-strengthened glass, follow the same techniques as cleaning annealed glass, minus scraping with a razor blade.

Tempered Glass

Often referred to as "safety glass," tempered glass is five times stronger than annealed glass. It shatters into pebble-sized pieces, making it less likely to cause injury.

Tempered glass is easy to scratch, so be sure to use a high-quality window cleaner and soft microfiber towel. Don't forcefully scrub the window, and never scrape with a razor blade.

Coated Glass

From tinted windows to low-E coatings to glass with reflecting films, coated surfaces are meant to decrease heat buildup in your home or car. The coatings make the window more vulnerable to damage if you clean them too roughly.

Exercise special care when cleaning coated surfaces:

- Never use razor blades.

- Choose a window cleaner that doesn't contain ammonia.
- Dry the window with a soft microfiber towel.
- Clean one window using a gentle technique and assess the results before moving on to the remaining windows.

Self-Cleaning Windows

If all this talk of how to clean glass has you feeling tired, you may prefer self-cleaning windows. As the name suggests, this type of glass cleans itself so you don't have to:

- The photocatalytic process uses direct sunlight to break down dirt and organic materials.
- The hydrophilic process allows rain to run off the window in sheets, taking loosened dirt with it.
- The windows dry quickly and leave no streaks behind.

Bathroom Mirror

For a streak-free bathroom mirror, follow these tips:

- Remove toothpaste splatters or dried on hairspray with a cotton pad dampened with rubbing alcohol.
- Spray the mirror with glass cleaner.
- Wipe the mirror with a microfiber cloth.
- Check for streaks and buff the glass until it's completely clean.

Windshield Interior

A car wash doesn't remove the foggy, yellowy film that forms on the inside of your windshield. The awkward angle of the glass makes it hard to clean by hand. To ease the task, spray a "Reach and Clean" tool with glass cleaner. Spin and rotate the tool to get into every corner of the windshield with minimal effort.

Cleaning windows and glass around your home has never been so easy! For more tips on how to clean glass, please contact Glass Doctor (https://glassdoctor.com/contact-us) today.

Need a whole-house clean? Molly Maid, our sister company, can help! Explore our entire family of Neighborly brands at GetNeighborly.com (https://www.getneighborly.com/).

Categories

Archives

March 2020 (/blog/archives/202003)	2
February 2020 (/blog/archives/202002)	3
January 2020 (/blog/archives/202001)	1
December 2019 (/blog/archives/201912)	4
November 2019 (/blog/archives/201911)	4
October 2019 (/blog/archives/201910)	4
September 2019 (/blog/archives/201909)	4
August 2019 (/blog/archives/201908)	4
July 2019 (/blog/archives/201907)	4
June 2019 (/blog/archives/201906)	3
May 2019 (/blog/archives/201905)	4
April 2019 (/blog/archives/201904)	4
March 2019 (/blog/archives/201903)	3
February 2019 (/blog/archives/201902)	1
January 2019 (/blog/archives/201901)	3
December 2018 (/blog/archives/201812)	4
November 2018 (/blog/archives/201811)	3
October 2018 (/blog/archives/201810)	4
September 2018 (/blog/archives/201809)	4
August 2018 (/blog/archives/201808)	4
July 2018 (/blog/archives/201807)	4
June 2018 (/blog/archives/201806)	4
May 2018 (/blog/archives/201805)	4
April 2018 (/blog/archives/201804)	4
March 2018 (/blog/archives/201803)	5
February 2018 (/blog/archives/201802)	2
January 2018 (/blog/archives/201801)	1
December 2017 (/blog/archives/201712)	3
November 2017 (/blog/archives/201711)	4
October 2017 (/blog/archives/201710)	2
September 2017 (/blog/archives/201709)	4
August 2017 (/blog/archives/201708)	4
July 2017 (/blog/archives/201707)	2
June 2017 (/blog/archives/201706)	2
May 2017 (/blog/archives/201705)	3
April 2017 (/blog/archives/201704)	3
March 2017 (/blog/archives/201703)	4
February 2017 (/blog/archives/201702)	4
January 2017 (/blog/archives/201701)	4
December 2016 (/blog/archives/201612)	3
November 2016 (/blog/archives/201611)	4

Select Glass Type...

(https://glassdoctor.com/special-offers)

Special Offers

Discover the latest competitive savings on the best auto, home, and business glass repair and replacement services in the industry.

(https://glassdoctorcareers.careerplug.com/jobs)

Work for Glass Doctor

Apply Online to work for a Locally Owned and Operated Glass Doctor Franchisee.

(https://glassdoctor.com/neighborly)

A Neighborly™ Company

Learn more about our community of home service experts.

(https://www.facebook.com/glassdoctor)

(https://twitter.com/glassdoctor)

(https://www.linkedin.com/company/glass-doctor)

(https://www.pinterest.com/glassdoctor/)

(https://www.youtube.com/user/GlassDoctorCorp?sub_confirmation=1)

We fix your panes!®

Login (/user/login)

How to Clean Metal

By MARY MARLOWE LEVERETTE | Updated on 07/01/22

The Spruce / Sarah Lee

IN THIS ARTICLE

PROJECT OVERVIEW

WORKING TIME: 5 mins - 1 hr

TOTAL TIME: 5 mins - 8 hrs

SKILL LEVEL: Beginner

to remove dust, grime, and, often, tarnish or oxidation.

Tarnish appears on so cal reaction occurs between the metal anc ygen or sulfur dioxide. Not as corros e metal and protects the underlying layers opper, and silver are most susceptible to tai

FEATURED VI

How to Remove Rust and Food Stains From Stainless Steel

There are hundreds of commercial metal cleaners on the market that do a good job of keeping metal looking good, but most cleaning can be done with items you probably already have in the pantry. (Most metal items can be safely washed in warm water and a mild detergent.) We'll take a look at the best ways to clean and remove rust from different types of metal.

Before You Clean Any Type of Metal Object

01 Consult the manufacturer's care instructions for the proper cleaning method.

02 Test any cleaning product on an inconspicuous space to make sure that it does not harm the metal.

03 Metals are not as tough as you'd expect, so always use the least abrasive cleaner possible to prevent scratching.

04 Consult an expert before cleaning precious metals like jewelry or valuable antiques,

How Often to Clean Metal

There is no one rule to follow about the frequency to clean metal.

- Serving and cooking utensils, metal water bottles, and any metal item used for food should be cleaned after every use.
- Appliances like refrigerators, stoves, and washers should be cleaned at least monthly.
- Decorative metal objects should be dusted weekly and polished when needed.
- Rust should be removed as quickly as possible when it appears on metal because it will continue to spread.

RELATED: The Best Silver Polishes for Adding Shine and Protection

What You'll Need

Equipment / Tools

- Soft cloths
- Soft-bristled brush
- Electrostatic dusters
- Microfiber cloths

Materials

- Dishwashing liquid
- Commercial metal polishes
- Lemons or lemon juice
- Distilled white vinegar
- All-purpose flour
- Table salt
- Aluminum foil
- Baking soda

Instructions

How to Clean Metal

The Spruce / Sarah Lee

01 Aluminum

Aluminum is used to make pots and pans, window frames, and outdoor furniture. Untreated aluminum is highly susceptible to discoloration and pitting from acids. Untreated aluminum cookware will discolor in the dishwasher or when used to prepare acidic foods like tomato sauce. It is nearly impossible to restore the original finish.

However, anodized aluminum found in heavy-duty cookware has a coating that protects it from harm. It is best to hand-wash aluminum cookware with warm water and dishwashing liquid.

Aluminum window frames and outdoor furniture can be washed with mild all-purpose soap and dried well to prevent streaking. To keep the finish shiny, coat the frames with paste car wax.

02 Brass

Brass is a favorite for door and cabinet hardware, furniture, and decorative items like statues, bookends, and paperweights. Many modern brass items are coated with a lacquer to prevent tarnish. Eventually, the lacquer can wear away and it's time to polish or let the brass turn brown. The easiest way to clean brass is with a commercial cleaner.

03 Cast and Wrought Iron

Unless cast iron and wrought iron are kept well-oiled or painted, they are going to rust. Both can be washed with soap and water to remove food particles or soil but then must be treated immediately to prevent rust from forming. Cast iron cookware is seasoned with vegetable oil, and wrought iron furniture or fences must be painted or lacquered after cleaning.

04 Chrome

Chrome is a coating applied to a base metal and is often found on furniture and bathroom fixtures. Regular cleaning with items from your pantry like baking soda and distilled white vinegar will keep it shiny and streak-free.

05 Copper

How you care for copper items depends on the finish you prefer. Copper develops a lovely patina that you can maintain with gentle cleaning with soap and water. However, if you like the copper to look like a bright, shiny penny, you should use acidic items from your pantry like lemons or ketchup or a commercial cleaner to create a shine.

06 Gold

Cleaning gold or gold-plated jewelry is simple because it does not tarnish easily. Just a quick soak in some dishwashing liquid and warm water, followed by a rinse in clean water and drying with a soft cloth, will restore its luster.

07 Pewter

Pewter items should have a warm, low luster sheen. You can use a commercial cleaner or mix your own with distilled white vinegar, flour, and salt.

08 Silver

Whether you have sterling silver or silver-plated items, they will tarnish due to exposure to oxygen (oxidation). Most commercial silver polishes leave a beautiful shine without removing the patina that gives ornate silver its depth and definition. Some people swear by the aluminum foil and baking soda soak to keep silver shiny, but it can remove too much patina.

09 Stainless Steel

Because stainless steel is easy to clean and disinfect, it is the preferred metal in commercial kitchens for countertops and appliances. However, stainless steel can scratch, and water and food can leave streaks on some stainless steel finishes. One of the best ways to keep it streak-free is to use a microfiber cloth to carefully dry the finish after every cleaning.

10 Steel

Steel that is used for home furnishings or a metal roof is almost always coated to prevent rust and corrosion. Cleaning should be done with warm water and an all-purpose cleaner to help prevent scratches to the finish that could allow rust to form.

Tips to Keep Metal Clean Longer

- After wearing jewelry, wipe it with a jewelry cleaning cloth to ensure there's no moisture on it.
- When not wearing jewelry, store it in a climate-controlled room or an airtight container.
- Store silver pieces in a drawer or wrap in acid-free tissue, silver cloth, or cover with tarnish-resistant flannel.

READ NEXT: The Best Jewelry Organizers to Store and Display Your Accessories

CLEANING HOW-TOS

Never Wear Tarnished Jewelry Again

By MARY MARLOWE LEVERETTE

By MARY MARLOWE LEVERETTE

PRODUCTS & APPLIANCES

Use This Trick to Remove Tarnish from Copper and Brass

By ERIN HUFFSTETLER

CLEANING HOW-TOS

How to Clean Sterling Silver and Keep It Shining

By MARY MARLOWE LEVERETTE

CLEANING HOW-TOS

Here's How to Keep Chrome Shiny and Bright Using Ingredients You Probably Already Have

By MARY MARLOWE LEVERETTE

KITCHEN CLEANING

Remove Stains and Make Your Stainless Steel Sink Sparkle

By MARY MARLOWE LEVERETTE

By MARY MARLOWE LEVERETTE

CLEANING

Missing the Midas Touch? Keep Your Gold Jewelry Gleaming

By MARY MARLOWE LEVERETTE

CLEANING HOW-TOS

Use This Simple Trick to Clean Your Silver

By MARY MARLOWE LEVERETTE

GREEN CLEANING

How to Clean Copper Pans and Other Copper Surfaces Naturally

By LEAH FRENCH

CLEANING HOW-TOS

How to Remove Grease From Metal

By MARY MARLOWE LEVERETTE

Surface

By MARY MARLOWE LEVERETTE

CLEANING

Keep Your Stainless Steel Jewelry Looking Its Best

By MARY MARLOWE LEVERETTE

CLEANING FLOORS

The Best Way to Clean Indoor and Exterior Concrete Floors

By MARY MARLOWE LEVERETTE

GREEN CLEANING

Learn How to Make Your Own Cleaning Solutions for Around the Home

By MARY MARLOWE LEVERETTE

BATHROOM CLEANING

How to Clean a Shower

By MARY MARLOWE LEVERETTE

How to Clean Microfiber Cloths

Difficulty
Beginner

Duration
Under 2 hours

Microfiber cleaning cloths are some of the best cleaning tools around. Effective and reuasble, these cloths can replace mounds of paper towels in your cleaning routine. However, the best microfiber cleaning cloths will only work well if you take care of them. This guide teaches you how to clean microfiber cloths so that they last and keep cleaning efficiently.

SHOP CLEANING SUPPLIES NOW

Jump to Specific Section

1 Washing Microfiber Cloths

When washing microfiber cloths, avoid harsh soap, fabric softener or detergent with laundry additives, including fragrances and fabric conditioners. These coat the fibers of the cloth and make them less effective for cleaning. Lightly dusty or dirty microfiber cloths can be hand-washed.

Hand-Washed:

- Shake out the fabric outdoors or into a trash bag to release excess dirt.
- Run a basin of cool or warm water.
- Add cloths and agitate by hand. Hand scrub any heavily stained areas.
- Soak the cloths for 15 to 20 minutes, then agitate again.
- Rinse the towels thoroughly under running water.
- Wring out excess water.

Microfiber cloths can be machine-washed for convenience or if the fabric is excessively dirty or stained. Do not wash microfiber cleaning cloths with other types of fabric. Other fabrics can ruin the fibers of your microfiber cleaning cloths, abrading the fibers and leaving lint on the microfiber surface. In particular, avoid mixing cotton fabrics with microfiber.

Machine-Washed:

- Shake the microfiber cloths outdoors or into a trash can to release excess dirt.
- Machine wash a load of microfiber cloths in cold or warm water. Do not use hot water.
- If using detergent, choose a gentle detergent with no scent or laundry additives. Use a small amount of detergent, no more than one or two teaspoons.
- If the microfiber towels have an odor that needs to be eliminated, add a tablespoon of white vinegar to the machine load.
- Allow the machine to complete half of the agitation cycle, then stop the cycle and allow the load to soak for 15 to 20 minutes.
- Resume the wash cycle and allow it to complete.

Tip: Unscented detergent may contain additives to cover the scents of soap ingredients, while “free” detergents are generally free of additives such as color, scent or fabric-conditioning ingredients.

2 Drying Microfiber

Microfiber cloths dry quickly, whether you choose to air-dry or machine dry.

Air-Drying:

- Shake out the microfiber cloths and hang to dry in direct sunlight.
- If hanging indoors, make sure you hang them in an area with good air circulation.

Machine Drying:

- Thoroughly clean out the dryer lint trap both before and after drying microfiber cloths. A dirty trap can spread dryer lint and deposit it on the microfiber, damaging the fibers.
- Do not add dryer balls or dryer sheets to the load.
- Set the dryer to a low heat or an air-dry cycle.

3 Maintain Your Microfiber Cleaning Cloths

To maintain your microfiber cloths, shake them after use to dislodge dirt, then rinse thoroughly. Store microfiber cloths together, separate from other types of cleaning cloths or materials. When using microfiber cloths, avoid cleaning chemicals. Most microfiber works better with water only. If you do want to use chemicals, use very small amounts. Do not iron microfiber cloths; excessive heat can melt the fibers.

Microfiber cloths make quick work of most cleaning tasks because of their efficiency in picking up dirt and dust—reducing the number of cleaning products you use. Invest in good microfiber cleaning cloths and care for them properly to extend their life and save money over the long term. Looking for a product to complete your project? The Home Depot has options to deliver online orders when and where you need them.

Shop this Project

Comet 21 oz. Pine All Purpose Cleaner PWD Non 24 oz. x 21 oz.

(75)

$1.00

Add to Cart

HDX 16 in. x 16 in. Multi-Purpose Microfiber Cloth (24-Pack)

(723)

$9.98 /bag

Add to Cart

LG Electronics 4.5 cu. ft. Large Capacity High Efficiency Stackable Front Load Washer in White

(3141)

$698.00 ~~$949.00~~
Save $251.00 (26%)

Add to Cart

See More

Feedback

Related Guides

How to Clean Painted Walls

Window Cleaning Guide

Spring Cleaning Checklist

How to Make Your Own Cleaning Wipes

Explore More on homedepot.com

Bath

Hand Towel Holder Black Towel Racks

Fully Extendable Drawers 60 Inch Vanities Bathroom Vanities without Tops

Chrome American Standard Bathtub & Shower Faucet Combos

Buy Home Decorators Collection Aberdeen 36 in. W x 22 in. D Vanity in Black with Carrara Marble Top with White Sink Aberdeen 36B

Doors & Windows

White 64 x 80 Steel Doors

36 x 80 Clear Glass Steel Doors With Glass

JELD-WEN 33.375 in. x 60 in. W-2500 Series Black Painted Clad Wood Double Hung Window w/ Natural Interior and Screen THDJW177200511

Kitchen

Dayton Kitchen Sinks

6 mo 5-6 people Water Filters

Green Kitchen Gadgets & Tools

What's in Season

Schlage Chrome Entry Door Knobs

Highly Rated Victor Pest Control

Adjustable Humidistat Highly Rated Window Air Conditioners

View More

How doers get more done ™

Need Help? Please call us at: 1-800-HOME-DEPOT (1-800-466-3337)

Customer Service

- Check Order Status
- Pay Your Credit Card
- Order Cancellation
- Returns
- Shipping & Delivery
- Product Recalls
- Help & FAQs
- Privacy & Security Center

Resources

- Specials & Offers
- Military Discount Benefit
- DIY Projects & Ideas
- Truck & Tool Rental
- Installation & Services
- Moving Supplies & Rentals
- Protection Plans
- Rebate Center
- Gift Cards
- Catalog
- Subscriptions

About Us

- Careers
- Corporate Information
- Digital Newsroom
- Home Depot Foundation
- Investor Relations
- Government Customers
- Suppliers & Providers
- Affiliate Program
- Eco Actions
- Corporate Responsibility
- Home Depot Licensing Information

Special Financing Available everyday*

Pay & Manage Your Card

Credit Offers

Feedback

Get $5 off when you sign up for emails with savings and tips.

Enter Email Address GO

Shop Our Brands

How To Clean Vinyl Records Without Damaging Them

Last updated July 28, 2022 By David Richard — 10 Comments

I've always found cleaning records to be a hassle.

But it's something you need to do if you want to keep your record collection in good shape.

But what's the best way to clean them?

Read 100 websites and you'll learn 100 different methods.

The truth is: the best way is to use a vinyl record vacuum cleaner. Unfortunately, they are not cheap.

For most people the best compromise between cost and not doing damage to your records is to use distilled, de-ionized water with a bit of cleaning solution (or dish soap) added.

I cover both methods below.

Keep reading to learn the two best methods for cleaning your vinyl record collection and keeping those discs in optimum condition.

Contents [show]

How To Clean Vinyl Records At Home

If you've searching for cleaning methods, you've likely come across hundreds of pages, each of them with the secret solution. The truth is, you're probably better off avoiding most of those methods.

None of them work better than the two methods below and some will actually result in damage to your vinyl records.

There are really only two cleaning methods worth considering and we'll cover both below.

But before I explain how to clean vinyl records, I want to briefly talk about the best way to handle and store them.

Incorrect handling and storing is the number one cause of damage to records, but even if it doesn't cause damage, incorrect handling can make your records dirty.

And since the best cleaning method of all is to not have to clean them in the first place, it makes sense to try and minimize the amount of dirt you get on your records.

How To Properly Store And Handle Vinyl Records

The absolute best way to clean your records is to not have to do it at all. Storing and handling your records properly will help minimize how often they need to be cleaned.

Storage

You know those paper sleeves many records come in? Those are actually not a good way to store records. They can damage records chemically. The only safe sleeves are plastic sleeves.

Always store your records vertically and don't squeeze them together too tight. Never lay them flat and stack them on top of each other. This can warp them.

Handling

The number one rule when handling records is to not touch the surface. Try to touch them only where the label is and on the outer edge, in order to prevent oils from your finger from transferring to the surface of the record. The best way to hold a record is with two hands on the outside edges.

Ideally, you should give your records a quick clean with a carbon fiber brush (or a suitable alternative, like the cloths you use to clean glasses or cell phone screens) every time you play them, one time before playing and one time after.

Finally, it is very important to keep the stylus clean. Since it runs along the grooves of the records, it picks up any dist found there. You want to clean it before and after every use, to prevent it from causing any damage to your vinyl.

Best Way To Clean Vinyl Records

We'll start with the best option for cleaning, but it will require spending some money

For most casual collectors, the budget method below works just fine. And chances are, you already have all, or most, of the tools required lying around your house.

The best way to clean a record is with a vinyl record vacuum cleaner kit.

Unfortunately, they are not cheap, which is why I don't generally recommend them for most casual record collectors. Professional ones cost several thousand dollars and even the ones for home use cost several hundred.

Here is an affordable semi-professional kit. If you have the budget, this is a great option.

Record Doctor Vacuum Cleaning Vinyl Record Washer

$219.95

- Safely removes dust, dirt, grease, grime, etc. from record grooves
- Vinyl-protecting felt cleaning strips
- Same high-performance vacuum motor as more expensive models
- Manual operation saves money over automatic models
- Includes solution, brush, turner and user guide

View On Amazon

We earn a commission if you make a purchase, at no additional cost to you. 09/10/2022 10:09 am GMT

If that is a bit out of your price range, here is a great home kit I recommend. It also happens to be one of the lowest priced kits available (at least among those that are any good). The main reason it costs less is that you have to turn the record by hand while it is being cleaned.

Spin-Clean Record Washer System

~~$79.99~~ $70.20

- Easy To Use
- Cleans All Types Of Vinyl
- Specially Formulated Cleaning Solution
- Made In USA With Limited Lifetime Warranty
- Includes Cleaning Solution, Brushes, Rollers, And Cloths

View On Amazon

We earn a commission if you make a purchase, at no additional cost to you. 09/10/2022 01:34 am GMT

Cleaning records with a vinyl vacuum cleaner is easy. First you want to remove any loose dust or debris with the brush. Then you apply the cleaning fluid. Finally, you put the record in the vacuum cleaner, which sucks the cleaning fluid out of the grooves along with any dirt.

Your records end up cleaner than with any other method and the risk of doing damage is much lower as well. But due to the cost of the vacuum cleaner, it's really only worth it if you have a lot of records.

How To Clean A Vinyl Record On A Budget

If you don't want to spend a few hundred to a few thousand dollars on a vacuum record cleaner, this is the section for you. You do still need a few materials, but there are also some common household products that work just fine as alternatives.

The main drawback of this method is that you need to make some contact with the record and that it may involve the use of soap, which will leave some residue (any soap or cleaning solution will leave some residue).

Materials Needed

Here is what you will need to clean your records using this method.

Warm water

Some people say you should use hot water, but there's no real benefit to that. If at all possible, the water should be distilled and de-ionized, otherwise the impurities will remain on the surface of the record. You can find de-ionized water in most pharmacies or on Amazon.

Dish soap (or record cleaning solution)

Dish soap is the cheapest option, but it will leave a bit of residue on your records. Record cleaning solution is a better choice, but a bottle will generally cost $10 to $30.

If there are no fingerprints or other oily smudges on the record, you can get a way using just water, which is actually better for the record.

Carbon Fiber Brush

Carbon fiber brushes are ideal, because the carbon fibers remove any static charge that keeps dust sticking to the record's surface. Here's a great one that doesn't cost too much. A decent alternative are those cloths you use to clean glasses or cell phone screens.

Soft, Lint-Free Cloth

You want a cloth that is soft and absorbent and will not leave behind lint. The cloths you use to polish cars work really well and they only cost a few dollars.

Alternative: A Complete Cleaning Kit

There are a number of cleaning kits available in record stores and on Amazon. Here is a great one that comes with everything you need to clean your records and also the stylus.

Big Fudge Vinyl Record Cleaning Kit

$22.99

This cleaning kit includes:

- Soft velvet brush
- Stylus brush
- Cleaning brush
- Cleaning solution
- Pouch

View On Amazon

Cleaning The Record

Follow these steps to safely clean your vinyl records.

Step 1 — Prepare the Cleaning Liquid

First warm up the distilled, de-ionized water. If you are using water only, you are done. If you are using dish soap, just add a little bit. If you are using a cleaning solution, follow the instructions on the bottle. Set this aside until step 3.

Step 2 — Remove dust and other loose particles

Before you do anything else, you want to make sure there are no loose particles on the surface of the record. They can scratch the record during cleaning.

To remove loose particles, gently brush the carbon fiber brush over the surface of the record in a circular motion in the direction of the grooves.

Make sure to do this gently. You do not want to push any dust into the grooves or drag any particles across the grooves that could cause scratching.

Step 3 — Clean the Record

Wrap the soft, lint-free cloth over your index finger and dip it into the cleaning liquid. You just want to get a little bit of the liquid on the cloth; it should not leave behind any wetness on the record.

Start in the center of the record and run your finger along the grooves in a clockwise direction. Follow the grooves until you get to the outside edge of the record. Then reverse direction and

follow the grooves back to the center in a counter-clockwise direction, just like the stylus does when the record is playing.

As you are running your finger over the record, make sure to keep your fingertips flat. You not not want to use your nails and risk scratching the record. You also don't want to get any wetness on the label.

If you see some wetness on the record after cleaning it, use a dry part of the cloth to dab it away. Then brush over it with the carbon fiber brush.

Step 4 — Repeat if Necessary

If the record is still dirty, repeat with a clean part of the cloth. In fact, whenever you notice the cloth getting dirty, you should switch to a clean part. The same goes for the water. Once it starts getting dirty, dump it and use fresh water.

Step 5 — Rinse the Record

If you used dish soap, cleaning solution or anything other than plain water, you want to rinse the record to remove any soapy residue. Just repeat the same process as you used for cleaning, but with water only. Repeat until there is no residue left on the record.

A DIY Record Vacuum

Here is a great video that explains how to make your own solution and how to rig your home vacuum cleaner so it can be used to clean records. This is as budget as it gets.

Record Cleaning Tips

I'll close this post with some quick tips on taking good care of your vinyl collection:

- Try to **clean your records with a carbon fiber brush before and after you play them,** every single time; regular maintenance is vital
- Always use **distilled and de-ionized water** to clean your records
- **Never use rubbing alcohol** to clean a record, since it removes the shine
- Never clean your records before **first removing surface debris**
- Make sure the **cartridge and stylus are clean and in good shape,** so they don't damage your records
- Only use the carbon fiber brush to **gently brush over the surface,** not to deep-clean the grooves
- If you can afford it, **a quality vinyl record vacuum cleaner is by far the best way** to clean a record
- New records are not usually clean, so make sure to **clean them before you play them**
- If you use a cloth instead of a carbon fiber brush, **make sure it is lint-free**
- **Store records vertically and in plastic sleeves;** never stack them on top of each other; much more on record storage, including which inner and outer sleeves to get, in this article
- **Never touch the surface of a record**
- **Only buy quality record players;** a lot of the cheap ones will actually damage records

Cleaning Vinyl Records: Final Thoughts

As mentioned, there are hundreds of different methods out there for cleaning vinyl records. I have found the two given here to be the best, by far.

Of course, there are other methods that work, too. The problem is that many of the methods out there are ineffective at best, and can actually damage your precious records at worst.

If you have any valuable records, you definitely want to make sure any cleaning method you use is 100% safe. In fact, it may be worth it to have especially valuable disc professionally cleaned.

Comments

Sarah E Barnes says
February 26, 2020 at 13:37

I have found using toothpaste to clean my vinyl.s. I found a bunch of 45's in an old home, which had been in a flooded basement at one time or another. I was trying to figure out how to clean them because there are so many different ways to clean records. I had heard of using toothpaste on CD's that had been scratched. I tried this with several records and distilled water to rinse. I took a tube of toothpaste, put some on the record, took my finger and rubbed it all over the record accept the label area, then took a baby's toothbrush and brushed the record with the toothpaste to make sure I got all the nasty stuff off the records, then I took it and rinsed it in the distilled water. I made sure I removed all the toothpaste, took a soft towel and dried the records. Cleaning the label was a little more tricky. I used another towel and used a little alcohol and cleaned off the labels. Let them dry on their own.

Reply

David Richard says
February 27, 2020 at 01:41

Interesting idea. Never would have thought of it myself, that's for sure.

Reply

Nick says
March 6, 2021 at 09:48

To protect the label buy 2 – 4 inch auto dent pullers and squeeze them together one on each side of record label and rinse the record with tap water then wipe with a microfiber cloth . Then spray distilled water on record and wipe with new microfiber cloth and set in an old style dish drainer for 20 minutes.

Reply

Bill Onesty says
August 20, 2022 at 14:39

I would not use toothpaste as it is abrasive. The hardness of the abrasive material in it is softer than tooth enamel so it cleans the biofilm off your teeth but does not scratch the enamel. However I think the abrasive is harder than vinyl and will scratch it.

Reply

Rebecca Gardner says
October 23, 2020 at 08:44

It’s good to know that records should be cleaned with a carbon fiber brush before and after we play them each time. My husband and I really want to find some of our favorite video game soundtracks on vinyl since we’re big collectors. Thanks for teaching me how to keep the records in the best shape once we get them!

Reply

Mark says
January 10, 2021 at 08:13

I have several old 78's made in the 40's by my grandfather. They were made at home on a record making machine. They're made from a metal disk with a vinyle or plastic coating. Should I clean these like I would clean a modern record? They are pretty rough. Thanks

Reply

Instant collection says
July 5, 2021 at 20:35

You can clean them by hand using the methods described above. But those records are made from different materials. Do not use any cleaner that contains alcohol. You will destroy them.

Reply

Derek says
March 3, 2021 at 15:09

Where do you get plastic album sleeves ?

Reply

Nick says
March 6, 2021 at 09:50

E-bay

Reply

1-old-dj says

April 1, 2021 at 15:04

I use a website called BagsUnlimited.com they have archival boxes, all combinations of paper, paper with plastic lined or just plastic sleves, plastic sleeves for the while album to fit in, etc. they Also have a variety of sizes from small records to the 180gram variety that take a slightly different size. Enjoy. I have had the archival boxes over 10years. Holding up great.

Reply

Leave a Reply

Your email address will not be published. Required fields are marked *

Comment *

Name *

Email *

Website

Notify me of follow-up comments by email.

Notify me of new posts by email.

POST COMMENT

SEARCH THIS SITE

Search the site ...

RECENT POSTS

Best Record Player Under $100 (What To Sacrifice At This Price?)

Best Turntable Under $200 (Reviews And Comparison)

Victrola Record Player Won't Turn On (How To Fix It)

Victrola Suitcase Record Player Skipping (Troubleshooting Steps)

Technics 1200 MK2 Vs MK5 (Solid Upgrade Or Waste Of Money?)

Rega RP6 Vs VPI Scout (It's A No-Brainer)

Marantz TT42P Review (One Big Reason Not To Get It)

Is My Turntable MM Or MC? (And Is MC Worth It?)

Best Record Player (Reviews Of The Top Value Turntables)

How To Tell What Year A Vinyl Record Was Made

IMPORTANT INFO

Home

About

Contact

Privacy Policy

FOLLOW US

SEARCH

Search the site ...

DISCLAIMER

Some recommended products may use affiliate links. TopRecordPlayers.com is a participant in the Amazon Services LLC Associates Program, an affiliate advertising program designed to provide a means for sites to earn advertising fees by advertising and linking to Amazon.com. As an Amazon Associate I earn from qualifying purchases.

*Amazon and the Amazon logo are trademarks of Amazon.com, Inc, or its affiliates

---

How to Use a Microfiber Cloth to Clean (Almost) Every Device in Your Life

By **Kimber Streams**

Published March 3, 2022

Save

Photo: Kimber Streams

The humble microfiber cloth is one of the most essential and underrated cleaning supplies. It can be used to clean some of your most precious and expensive possessions—from eyeglasses to laptops to televisions.

What you need

You may need some other tools, depending on the cleaning project, but all of these tasks require a decent microfiber cloth. Although we haven't done any head-to-head testing on microfiber cloths, I have used these **MagicFiber Microfiber Cleaning Cloths** for eight years to clean test laptops, mice, and keyboards, as well as my personal phone, monitor, television, and glasses.

You can get a 30-pack of 6-by-7-inch cloths for around $20—the same amount Apple charges for a single cloth of similar dimensions. MagicFiber also sells a set of **three extra-large, 16-by-16-inch cloths** for larger surfaces, like televisions. But you're also just fine with the smaller size.

Clean your phone

Photo: Sarah Kobos

You touch your phone a lot, so it's pretty much always in need of a wipedown. Our guide on how to clean your phone recommends turning it off and then wiping it gently with a dry cloth to remove fingerprints and smudges. If there are still stubborn spots you can't remove with the dry cloth, dampen the cloth with warm, soapy water (but don't get it sopping wet!) and give it another pass.

Readers also like

How to Clean Your Phone

Photo: Rozette Rago

Laptops are also major collectors of dust, finger grease, and stray crumbs. To clean your laptop, start by turning it off and removing the battery if you can. Then wipe down the whole thing—the keyboard, the trackpad, the screen, and the rest of the chassis—with a dry microfiber cloth.

For stubborn screen spots or any parts that remain shiny from hand oils, lightly dampen the cloth with warm water and revisit those bits. Be careful not to press down too hard on fragile components, like a non-glass screen or the trackpad.

Readers also like

How to Clean a Laptop

Clean your TV

Photo: Chris Heinonen

Even though a TV isn't touched as frequently as a phone or laptop, it can still accumulate smudges and dust. Before you begin cleaning your television, turn it off, and make sure it's completely cooled down. Then use a dry microfiber cloth to gently remove dust from the screen. Don't press too hard, since that can damage an LCD or OLED display.

For smudges, dampen a second microfiber cloth with distilled water and gently buff the smudges out using a circular motion. If the smudges still don't come off, mix just a couple drops of dish soap with distilled water, and use that with a third cloth. Then go back to the second, water-only cloth to remove any soap residue from the screen.

To clean your remote, use the dry cloth to give it a quick wipedown. If any hand oils remain, use the slightly damp cloth to remove them.

Readers also like

Photo: Nancy Redd

Anyone who wears glasses knows they need frequent cleaning, but did you know you shouldn't clean them with a dry microfiber cloth? Doing so just redistributes grease and rubs in small debris that can damage your lenses.

Instead, rinse your glasses for 15 seconds under warm water to dislodge excess grime. Then squirt a pea-sized drop of dish soap onto both sides of each lens, and gently rub the soap with your fingers to create a lather for cleaning the rest of the frame. Lightly shake excess water from your glasses, and then—this is where the microfiber cloth finally comes in—use a clean cloth to gently dry the glasses.

Readers also like

Photo: Kimber Streams

If you spend hours each day using a keyboard and mouse, over time they'll develop a lustrous sheen of natural hand oils. We recommend that once a week you unplug your keyboard, flip it upside down, and shake all the dust, skin particles, hair, and crumbs out. Then wipe down the keycaps with a microfiber cloth to remove some of the oils.

For your mouse, wipe the surface down with a microfiber cloth. If gunk builds up on the feet of your mouse or keyboard, wipe it off with a microfiber cloth, and use a toothpick to remove any stubborn bits. If you need to give your peripherals a deeper clean, check out our full guide on how to clean your keyboard and mouse.

Readers also like

How to Clean Your Keyboard and Mouse

I washed two microfiber cloths, one with Dawn soap (left) and one with Tide (right). Photo: Kimber Streams

Sometimes warm water alone isn't enough to get grease and oils out of your cloths. So I tried cleaning two microfiber cloths, one with a pea-sized drop of Dawn soap and one with a pea-sized drop of our recommended laundry detergent diluted in a bowl of warm water.

Both options cleaned effectively and didn't damage the cloth. I'd be inclined to use the Dawn again in the future because it's more effective at degreasing, and it leeched a bit less black dye from the cloth. If you do this, be sure to rinse the cloth very thoroughly before you use it again, to remove any traces of soap. Hang it to dry.

One Wirecutter editor regularly throws his microfiber cloths in a delicates bag in the washing machine, but we don't recommend doing this for a few reasons. Using fabric softener, laundry detergent containing fabric softener, bleach, or dryer sheets will coat your microfiber cloth.

About your guide

Kimber Streams

Kimber Streams is a senior staff writer and has been covering laptops, gaming gear, keyboards, storage, and more for Wirecutter since 2014. In that time they've tested hundreds of laptops and thousands of peripherals, and built way too many mechanical keyboards for their personal collection.

Mentioned above

It's easy to forget that your laptop needs to be cleaned. Thankfully, it's not hard to get dust and stray crumbs out of it.

How to Clean a Laptop →

Your AV gear doesn't need to be cleaned that often. But it's an important task to ensure the best performance.

How to Clean a Television and Home Theater Gear →

Dust, skin particles, and hand oils will eventually accumulate on a keyboard and mouse. Here's how to clean and disinfect a dirty keyboard and mouse.

How to Clean Your Keyboard and Mouse →

After more than 65 hours of research and testing 28 detergents, we found Seventh Generation Dish Liquid to be the best for most people.

The Best Dish Soap →

Further reading

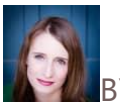
Your Laundry Sheds Harmful Microfibers. Here's What You Can Do About It.

How to Clean a Peloton Bike

Saved for later

Subscribe to Wirecutter

A Step-by-Step Guide to Cleaning the Kitchen, and Everything in It

 BY SHIFRAH COMBITHS

SHIFRAH COMBITHS
WITH FIVE CHILDREN, SHIFRAH IS LEARNING A THING OR TWO ABOUT HOW TO KEEP A FAIRLY ORGANIZED AND PRETTY CLEAN HOUSE WITH A GRATEFUL HEART IN A WAY THAT LEAVES PLENTY OF TIME FOR THE PEOPLE WHO MATTER MOST. SHIFRAH GREW UP IN SAN FRANCISCO, BUT HAS COME TO APPRECIATE SMALLER TOWN LIFE IN TALLAHASSEE, FLORIDA, WHICH SHE NOW CALLS HOME. SHE'S BEEN WRITING PROFESSIONALLY FOR TWENTY YEARS AND SHE LOVES LIFESTYLE PHOTOGRAPHY, MEMORY KEEPING, GARDENING, READING, AND GOING TO THE BEACH WITH HER HUSBAND AND CHILDREN.

published FEB 6, 2020

We independently select these products—if you buy from one of our links, we may earn a commission. All prices were accurate at the time of publishing.

Credit: Lana Kenney

As the center of your home life and the place where both literal and figurative nourishment takes place, your kitchen is the heart of your home. That might be why having a clean kitchen feels like the first step of having a completely clean house. In fact, even if you aren't able to often achieve that idyllic state of whole-house cleanliness, cleaning your kitchen goes a long way in making it feel like you have.

For more content like this follow

ORGANIZE & CLEAN

While tidying your kitchen daily is imperative for maintaining a space that always looks and feels its best, a regular deep cleaning is always a good idea. "Regular deep cleaning" here means something that falls between an after-dinner routine clean-up and a full-blown kitchen refresh (the kind where you soak the greasy oven hoods and dust your fridge's condenser coils). It's just enough of a scrub to have your kitchen looking speckless.

Here's a guide to what to clean, how to clean it, and in what order. But first, we have some helpful things to keep in mind if you want to keep your kitchen cleaning brief and focused.

Credit: Joe Lingeman/Apartment Therapy

A Few Things to Remember While Cleaning Your Kitchen

Keep these things in mind to make your kitchen-cleaning experience as pleasant and efficient as possible:

1. Don't get too deep in this type of cleaning

You're going for an overall deeper clean, not a deep cleaning of individual items. If you find yourself tempted to clean your oven interior, deep clean your dishwasher, take apart the toaster, or scrub the grout, skip it for now and make a plan to do it soon.

2. Use the right tools

Having the right cleaning kit on hand makes any job more satisfying and effective. For cleaning the kitchen, you may want to have a razor blade scraper handy for scraping gunk from your glass stove top, for instance. Also keep in mind that while white vinegar is definitely a cleaning workhorse, the acid in vinegar can damage natural stone counter tops like granite.

Titan Tools 4-Inch Mini Razor Scraper
$6.37
AMAZON
BUY NOW
SAVE TO WISH LIST

A STEP-BY-STEP

GUIDE TO CLEANING THE KITCHEN

1. Clear clutter off your counters
2. Empty the dishwasher and wash dishes
3. Dust the tops of the fridge and cabinets
4. Clean small appliances
5. Clean anything else that stays out on your counters
6. Scrub down the exterior of your stove and oven
7. Wipe down your counters
8. Deep clean your sink
9. Clear out the fridge
10. Clean the outside of your large appliances
11. Empty and wipe down your garbage can
12. Sweep, vacuum, and mop your kitchen floors
13. Add finishing touches, like clean towels and fresh flowers

@APARTMENTTHERAPY

SAVEPIN IT SEE MORE IMAGES
Credit: Photo: Esteban Cortez

Kitchen Cleaning: A Step-by-Step Guide

The cleaning routine described in this post is intended for a weekly or biweekly cleaning, depending on how heavily you use your kitchen.

Here's how to make your kitchen immaculate in about an hour:

1. Clear clutter off your counters

You can't properly clean around junk that doesn't belong in your kitchen in the first place. Start in one corner of the kitchen, or one section of counter, and remove everything that doesn't belong on your counters. It might be a good time to employ the laundry basket method. Don't bog yourself down or raise the potential for distraction by putting items away one by one right now. Just clear them away from the counter. You can put things where they go after all the counters are clear or after the kitchen is completely clean.

Credit: Joe Lingeman

2. Empty the dishwasher and the dish drainer and wash dishes

Whether your kitchen is fairly clean to begin with or you have some floating dirty dishes or pans that still need to get washed, starting with empty places to put your freshly washed dishes ensures that bottle necks don't hamper your cleaning efforts. If your dishwasher is full or nearly full of dirty dishes, wash any lingering dishes first and then run the dishwasher before you continue cleaning. Wash any and all dishes that are hanging around, including those water bottles that tend to be out on the counter next to the sink.

3. Dust the tops of the fridge and cabinets

No matter which room you're tackling, cleaning from top to bottom always makes sense. This way, as dirt and dust are dislodged and settle on the next lower surface, you're sure to clean it up. In the kitchen, you may begin at the top by dusting the overhead light fixtures, the top of your refrigerator, and the tops of your cabinets.

SAVEPIN IT SEE MORE IMAGES
Credit: Joe Lingeman/Apartment Therapy

4. Clean small appliances

Next, quickly clean your small appliances. You don't want to spend too long on this, or clean too deeply, but it's a good opportunity to shine and clear debris from your microwave, coffee maker, toaster/toaster oven, or stand mixer. Start with the interiors—dumping out crumbs from toasters and running a vinegar cycle through your coffee maker. Steam the inside of your microwave with vinegar and wipe down. Finish up by wiping down the exterior of each small appliance. Use a microfiber cloth dampened with a white vinegar solution or a bit of all-purpose cleaner. (But don't use vinegar on stainless steel—it could strip the shine.)

5. Clean anything else that stays out on your counters

In addition to some small appliances that get regular use, you may have a tray of cooking oils, a rack of mugs, or an urn holding cooking utensils out on your counters. Make sure these items are clean. Give trays a dusting or wash or wipe them down, wipe down any bottles or containers, and, while, you're at it, consider whether there's anything you've been keeping on the counters that you could put in a cabinet or drawer instead. This is also a good time to wipe down your dish rack (empty it first, obviously) and toss your drying mat in the wash.

SAVEPIN IT SEE MORE IMAGES
Credit: Joe Lingeman/Kitchn

6. Scrub down the exterior of your stove and oven

Again, a thorough oven cleaning might be best undertaken at another time, but briefly cleaning the exterior goes a long way in obtaining a spic-and-span kitchen. Start at the top: If you have a gas stove top, remove grills (you may want to soak them if they're grimy) and wipe the surface underneath with all-purpose cleaner; if you have electric burners, those can be cleaned with diluted dish soap (again, wipe the surface below with all-purpose cleaner); and an electric glass stove top is super easy, just wipe the whole thing down with warm soapy water.

Once the top is clean, wipe down the front of your oven with all-purpose cleaner, white vinegar, or diluted dish soap. Don't forget the knobs and display!

SAVEPIN IT SEE MORE IMAGES
Credit: Joe Lingeman/Apartment Therapy

7. Wipe down your counters

Once your dishes are all washed, you've dusted, and your small appliances are sparkling clean, it's time to give your counters the royal treatment. Working in sections, take everything off your counters, including the things that live there, such as your tray of cooking oils or your urn of cooking utensils. Dislodge crumbs caught between counters and the oven with a credit card or pan scraper, as necessary. Wipe your counters thoroughly with a bit of cleaner appropriate for your counter type and a microfiber cloth. Buff dry to make counters gleam. Repeat with each section of counter.

8. Deep clean your sink

Deep cleaning your sink is easier than it might sound. First, rinse it out. Use a scrubbing cleanser like Bon Ami or Bar Keeper's Friend, being sure to address nooks and crannies with a detail cleaning brush. Scrub your faucet and any sponge holders or soap dishes as well. Rinse everything. Finish by filling your sink with hot water and adding bleach to the water. Let it sit for ten minutes and drain.

If you have a garbage disposal and want to keep it smelling good, you can add lemons (or lemon peel) or any other citrus to the drain and run the disposal (with water running).

SAVEPIN IT SEE MORE IMAGES
Credit: Joe Lingeman/Kitchn

9. Clear out the fridge

This may not be the time to do an entire refrigerator deep clean, but do go through your shelves and remove anything expired, wipe down any spills, and put things in their rightful places.

SAVEPIN IT SEE MORE IMAGES
Credit: Joe Lingeman

10. Clean the outside of your large appliances

Wipe down the outside of your refrigerator and the dishwasher. Polish with stainless steel cleaner if appropriate.

Read more: How to Clean Stainless Steel Appliances

11. Empty and wipe down your garbage can

Now may not be the time to completely wash your garbage can, but make it as clean as you can inside the kitchen by taking out the trash if it's full, vacuuming out any crumbs in the bottom of the can, and wiping it inside and out with a disinfecting wipe. Do the same with your recycling and compost bins.

SAVEPIN IT SEE MORE IMAGES
Credit: Joe Lingeman

12. Sweep, vacuum, and mop the floor

Sweep with a broom to pick up all the larger crumbs and debris that end up on the kitchen floor, especially near your cabinet toe kicks. Nudge your broom under the fridge and oven, too. After sweeping, use a vacuum cleaner to get the fine dust and dirt. Follow it up with a thorough mopping to get at dirt and grime.

13. Add your finishing touches

As the crowning glory to your newly pristine kitchen, replace your sponges, rags, and dish towels with fresh ones, light a candle, and put some cut flowers on your counter or table.

SAVEPIN IT SEE MORE IMAGES
Credit: Minette Hand

If You Need a Deeper Clean:

Additional deeper cleaning tasks you may want to incorporate (in addition to oven interior cleaning, etc.) include exterior cabinet door cleaning, pantry cleaning, and cleaning underneath your appliances.

Remember that decluttering your kitchen, on the counters, inside cabinets, and your fridge and pantry interiors, makes a huge difference in the feel of your kitchen and how clean and organized you and your household are able to keep it.

Read more: The First 3 Things You Need to Do to Declutter Your Kitchen

Watch More Apartment Therapy Videos
Inside Angie's 350 Square Foot NYC Studio | House Tours

How to Clean and Disinfect Your House Keys

SHIFRAH COMBITHS

A Dry Mop and a Wet Mop Do Different Things — But You Don't Need Both

SHIFRAH COMBITHS

You Can Remove Any Blood Stain in 4 Simple Steps

ASHLEY ABRAMSON

Here’s How You Clean a Bathroom in 10 Minutes (or 30, or 60, if You’ve Got That Kind of Time)

SHIFRAH COMBITHS

28 Brilliant Ways to Keep Those Kitchen Counters Organized

SHIFRAH COMBITHS

I Could Never Get My White Sheets Really Clean, Until I Tried This 2-Ingredient Combo

SHIFRAH COMBITHS

5 New Habits to Keep Your Kitchen Mess-Free Since You're Always at Home Now

SHIFRAH COMBITHS

This is One Immediate Giveaway That Your Plants Are Fake

SHIFRAH COMBITHS

Using Your Toaster Oven More Often? Here's the 7-Step Weekly Clean You Need

SHIFRAH COMBITHS

This One-Step Daily TV Cleaning Routine Couldn't Be Easier

BRIGITT EARLEY

Spring Cleaning Guide: How to Spring Clean Your Whole House

SHIFRAH COMBITHS

Your Oven is Hiding a Feature That Makes it So Much Easier to Clean

SHIFRAH COMBITHS

6 Homemade Cleaners That Really Work

ASHLEY ABRAMSON

4 Cleaning Tips You Need to Know If You Have Stainless Steel Appliances

BRIGITT EARLEY

Everything You Ever Wanted to Know About Cleaning With Bleach

ASHLEY ABRAMSON

Two Easy Homemade Alternatives If You Don't Have Glass Cleaner

SHIFRAH COMBITHS

Log in to comment

CONVERSATION22 COMMENTS

Sort by

- HA
  HELLO_ ATHOMEWITHASHLEY8 February, 2020As a mom, I might not have time to do this every single evening by myself so I'd have my son help me as much as possible. But I can say that doing things little by little makes a huge difference to your sanity and keeping things manageable around the house!
- O
  OTV9 February, 2020I found this article really helpful. I have two modes: quick after-dinner clean (dishes, counters, stovetop, appliances) or full-on deep clean. There's nothing in between. And since the full-on deep clean takes hours, it only gets done once every 2-3 months (eek). This is a nice mid-way clean that ...**See more**
- TEEZE8 February, 2020That Laundry basket method doesn't work for me. Once it's off the counter my brain stores it as "away" and the basket ends up sitting there with my crap in it until cleaning that becomes the next project to tackle.
  - O M

MIDLILFECRISISSEXSYMBOL9 February, 2020That's why I don't use laundry baskets for clean laundry. My perfect closet would be a large room filled with wall hooks and laundry baskets! ;)

Powered by

Popular in the Community

How-To Toolkits

- 30 Skills to Know Before You're 30
- The Ultimate First Time Homeowner's Guide
- Your Guide to Everything Laundry

Follow us

Got a tip, kitchen tour, or other story our readers should see? TELL US ABOUT IT!

(https://envirowaste.com.au/)

SYDNEY'S WASTE MANAGEMI

We're the best service providers for removal & disposal
waste, packaged waste, bulk waste, grease trap waste,

GET A FREE QUOTE (https://

Secure Disposal Facility

Our restricted access disposal facility in Sydney operates with the highest standards of security and safety, ensuring that your waste is disposed of sustainably, securely, and privately.

Diverse Transport Fleet

The Enviro Waste fleet is comprised of various trucks and vehicles, allowing us to collect and transport all types of goods including liquid, packaged, bulk, hazardous and equipment waste.

Comprehensive Waste Solutions

There is no limit to the services our team can provide. Turn to us for ongoing waste management, waste removal, waste disposal, waste system cleaning and maintenance.

Enviro Waste Services Group

Enviro Waste Services Group, Liquid Waste Sydney – is a family owned and operated 24 hour Liquid Waste disposal company in Sydney who specialise in liquid waste removal founded on the extensive experience of its Owner and Director, Eddy Hawach.

Enviro Waste Services Group provides professional, high quality service but with the friendliness and personal follow-through of an Australian owned family-run company to all its clients, whether a multi-million dollar commercial project, or a one-off domestic septic tank or grease trap pump-out. We look forward to the opportunity to assist you with our septic tank cleaning, grease trap cleaning and all other liquid waste removal services in Sydney.

OUR SERVICES (HTTPS://ENVIROWASTE.COM.AU/SERVICES/)

Our Services

Liquid waste management experts that Sydney business owners trust!

(https://envirowaste.com.au/liquid-waste-removal-sydney/)

Liquid Waste Removal

'/envirowaste.com.au/liquid-waste-removal-sydney/) Enviro Waste Services Group Liquid Waste Sydney specialises in every
Waste disposal Sydney. This includes assessment, analysis, waste collection and documentation. We then transport to appro
PA waste treatment disposal points where it is either treated and/or recycled to the highest possible environmental standard

(https://envirowaste.com.au/oily-water-disposal/)

Oily Water Disposal

'/envirowaste.com.au/oily-water-disposal/) Enviro Waste Services Group is passionate about the health of the environment a
terways. We provide a vital oil waste disposal service to the community to ensure hazardous waste is contained, controlled a
recycled. This applies especial to oil waste disposal.

(https://envirowaste.com.au/grease-trap-waste/)

Grease Trap Waste

://envirowaste.com.au/grease-trap-waste/) Restaurant and café owners understand the importance of keeping grease traps
are numerous problems that can arise as the result of not maintaining a grease trap. Enviro Waste Services Group provides g
trap cleaning in Sydney to ensure that businesses can operate at their optimum levels.

(https://envirowaste.com.au/septic-tank-cleaning/)

Septic Tank Cleaning

//envirowaste.com.au/septic-tank-cleaning/) We provide cleaning / pumping / pumpout of septic tanks. Septic tanks receive from toilet flushes. The septic tank traps and breaks-down all solid matter turning it into what is called “sludge”, allowing flu exit safely to underground dispersion areas called “distribution trenches / drain fields”.

(https://envirowaste.com.au/packaged-waste-removal/)

Packaged Waste

s://envirowaste.com.au/packaged-waste-removal/) Enviro Waste Services Group offers Packaged Waste Removal in Sydney v reases the risk of the discarded products being pilfered and re-utilised, re-manufactured or recirculated without your author

(https://envirowaste.com.au/product-destruction-sydney/)

Product Destruction

//envirowaste.com.au/product-destruction-sydney/) Enviro Waste Services Group offers product destruction Sydney of prod general waste increases the risk of the discarded products being pilfered and re-utilised, re-manufactured or recirculated wit your authority.

(https://envirowaste.com.au/hazardous-liquid-waste-sydney/)

Hazardous Liquid Waste

s://envirowaste.com.au/hazardous-liquid-waste-sydney/) Enviro Services Group Liquid Waste Sydney specialises in every fac Waste disposal Sydney. This includes assessment, analysis, waste collection and documentation. We then transport to appro PA waste treatment disposal points where it is either treated and/or recycled to the highest possible environmental standard

(https://envirowaste.com.au/waste-management/)

Waste Management

//envirowaste.com.au/waste-management/) Enviro Waste Services Group provides waste management services all over Syd nercial, industrial and domestic needs. Our liquid waste removal and transport will manage any industrial waste regardless o lustry. We offer timely and cost effective liquid waste removal throughout Sydney as well as regular servicing and maintenan

(https://envirowaste.com.au/disposal-facility-sydney/)

Disposal Facility

//envirowaste.com.au/disposal-facility-sydney/) Enviro Waste Services Group collects, treats and disposes of liquid waste as industrial, hazardous and dangerous goods waste products packaged in containers, drums or bins. All Enviro Waste Services liquid and hazardous waste collection and disposal services are compliant with the relevant regulatory bodies.

High Pressure Clean

(https://enviropump.com.au/)

Enviro Pump Services

s://enviropump.com.au/) At Enviro Pump Services, we provide a comprehensive range of pump services to the Sydney metro
ıg northern and southern regions along the coast. Being part of the Enviro Group brand, we have a strong reputation to upho
it's our mission to exceed all expectations. Our technicians, plumbers and electricians are here for the long run.

Enviro Hills

REQUEST FREE QUOTE

Latest Articles

JGUST 16, 2022 | BLOG
TTPS://ENVIROWASTE.COM.AU/CATEGORY/BLO
)

iquid Waste Removal During ite Remediation

:tps://envirowaste.com.au/liquid-waste-removal-
ring-site-remediation/)

:e remediation is the process whereby a site is
nediated through the removal of pollutants such
contaminated soil, groundwater,...

LEARN MORE
(HTTPS://ENVIROWASTE.COM.AU/LIQUID-WASTE-REMOVAL-DURING-SITE-REMEDIATION/)

JULY 17, 2022 | BLOG
(HTTPS://ENVIROWASTE.COM.AU/CATEGORY/BLOG/)

What is Bilge Waste?

(https://envirowaste.com.au/what-is-bilge-waste/)

You may have heard the term 'bilge waste' before, but most people (unless you spend a large amount of time...

LEARN MORE
(HTTPS://ENVIROWASTE.COM.AU/WHAT-IS-BILGE-WASTE/)

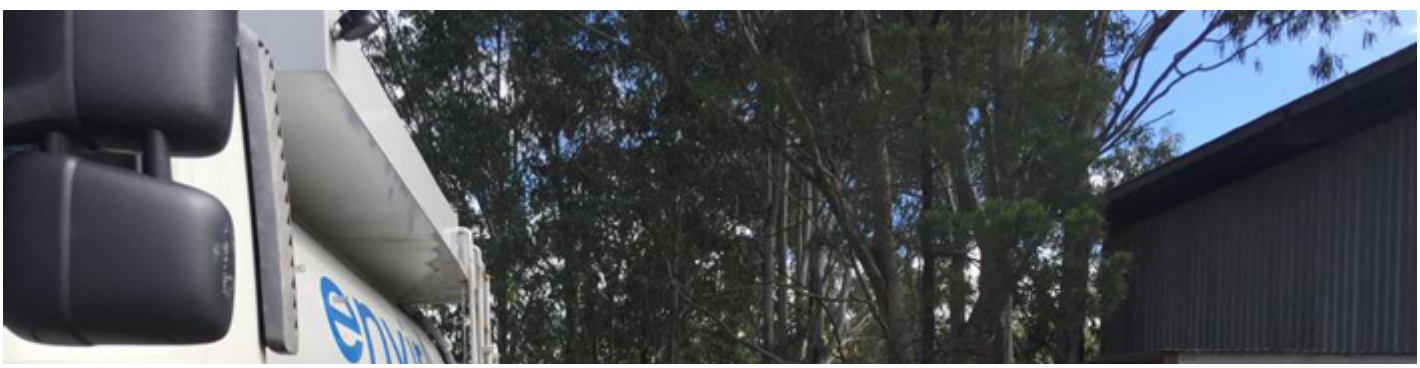
←

Your Satisfaction Is Our Priority

ctive and efficient waste management is our passion, and we're proud to deliver the r omprehensive services to our hospitality, residential, retail, events and body corporat clients.

rdable services

r you need assistance for a once-off waste removal task, or you want to arrange an ongoing partnership, we're ready to make



essional crew

ependable and knowledgeable. Our team has decades of experience providing world-class waste solutions to corporations a

Find Our Location

(https://g.page/EnvirowasteServices?share)

LOCATION (HTTPS://G.PAGE/ENVIROWASTESERVICES?SHARE)

/IRONMENTAL POLICY (HTTPS://ENVIROWASTE.COM.AU/WP-
NTENT/UPLOADS/2020/11/ENVIRONMENTAL-POLICY.PDF)

RK HEALTH & SAFETY POLICY (HTTPS://ENVIROWASTE.COM.AU/WP-
NTENT/UPLOADS/2020/11/WHS-SAFETY-POLICY-STATEMENT.PDF)

PABILITY STATEMENT (HTTPS://ENVIROWASTE.COM.AU/WP-
NTENT/UPLOADS/2022/04/ENVIRO-WASTE-3.PDF)

WHY CHOOSE US?

We're trusted by multi-million-dollar companies in Sydney CBD, as well as quaint fami households in the suburbs and on the coast.

FAST RESPONSE EXPERT ADVICE ALL INDUSTRIES

AST RESPONSE

ır crew is available to answer the phone anytime of day and any day of the week. When it comes to waste emergencies, it's vi mmitted to delivering an around the clock service. Put us on speed dial!

Waste Management Experts

Meet our leadership team.

Simon Saba

General Manager

John Paul Hawach

Operations Manager

Natali Abdul Rahman

Accounts Manager

Giacinta Malek

Accounts Assistant

Richard Fudge

Business Development Manager

Matt Jones

Business Development Manager

Michael Youngman

Business Development Manager

Andreena Tagavaitau

Assistant Scheduler

Cariana Gabrail

Assistant Scheduler

Tony Salloum

WHS and Compliance Manager

ıtact Us!

r Full Name

ıpany

r E-mail

ne Number

ı can we help?

END

Enviro Waste Services Group
70 followers

Enviro Waste Services Group
(https://www.facebook.com/111714797183176)

diations often uncover all sorts of unanticipated waste – such as
ated soil, ground or surface water, or debris

cover waste and need some help to proceed, contact Richard from
aste on 0499 995 408 or email Richard.f@envirowaste
ww.facebook.com/envirowaste).com to arrange safe disposal.

ediation (https://www.facebook.com/hashtag/siteremediation)
sposal (https://www.facebook.com/hashtag/wastedisposal)
natedsoil (https://www.facebook.com/hashtag/contaminatedsoil)
moval (https://www.facebook.com/hashtag/wasteremoval)

Other Business Partners – Pre-Qualification & Certificate of Recognition

BLUEGLUE

BROWZ MEMBER

Stockland

PROGRAMMED Property Services zero harm

conserve

Work Place WPCG Clearance Group WORKPLACE CLEARANCE GROUP

ABOUT

Enviro Waste Services Group, Liquid Waste Sydney is a family owned and operated 24 hour Liquid Waste disposal company in Sydney who specialise in liquid waste removal founded on the extensive experience of its Owner and Director, Eddy Hawach.

CONTACT INFO

14 Kiora Cres, Yennora NSW 2161, Australia

1300 141 315

info@envirowaste.com.au

LATEST NEWS

Liquid Waste Removal During Site Remediation (https://envirowaste.com.au/liquid-waste-removal-during-site-remediation/)

AUGUST 16, 2022

What is Bilge Waste? (https://envirowaste.com.au/what-is-bilge-waste/)

JULY 17, 2022

Grease Trap Maintenance and Repair in Sydney (https://envirowaste.com.au/grease-trap-maintenance-and-repair-in-sydney/)

JUNE 16, 2022

Tips for Managing Liquid Waste in the Workplace (https://envirowaste.com.au/tips-for-managing-liquid-waste-in-the-workplace/)

MAY 15, 2022

Stay connected:

Create a Preventative Maintenance Program for Your Home Cleaning Equipment

Steve Hanson

Unless you have employees, the biggest expense in your home cleaning business is likely your equipment and supplies. The tools of the trade can be pricey, but they're what allow you to do your job effectively and efficiently. Protecting that investment, then, is a top priority.

With proper care, vacuums and other machines can run reliably for many years. Without it, however, you'll be dealing with unexpected breakdowns and tools that die well before they should.

What are the keys to a smart preventative maintenance program for cleaning equipment?

Start From Day One

Caring for your equipment begins the day you purchase it (not months later when it starts to show signs of wear). Most house cleaners never open the owner's manual that comes along with every new machine or tool. That's a mistake.

The equipment manual is where the manufacturer shares best practices for operating and maintaining their product. Hold onto these manuals and consider laminating any service checklists included within them, and keep these with your cleaning supplies and equipment.

Also, make sure you and your staff are properly trained on the tools you use. Manufacturers and distributors of janitorial products typically offer written tests and other training materials, or you can search online for video tutorials from certified operators.

Take time to create and update an equipment procedures manual for your company. If you have employees, offer them training upon hiring and retraining on a regular basis.

from working effectively).

- Examine the filter for excessive soil. Clean (if washable) and/or replace if needed. Also look for obstructions in the clog ports or fan chambers.
- Look inside the hose to make sure it's not heavily soiled or clogged (clean as needed) and make sure the hose is properly attached to the machine.
- Check the cord for cuts or frayed wiring and

Are you or your staff maintaining the equipment properly?

the exterior of the vacuum for cracks or broken parts. (Damaged vacuums should be replaced or sent to an authorized service center for repairs.)

- Remove any obstructions that are wrapped around the brush roller or beater bar on an upright vacuum.

Also, the brush roller typically needs to be replaced every two to three months. Also, if you notice a difference in motor sound or smell burning rubber, shut down the vacuum immediately and reinstall or replace the belt.

Battery Maintenance

If you're like many house cleaners, you've made the switch to battery-operated vacuums. You've probably noticed that batteries are becoming smaller and lighter, and holding their charges longer. Although batteries don't last forever, they can have pretty long life expectancies when properly maintained.

No matter the type of batteries you're using, some general tips include storing and charging them in a well-ventilated area that's neither extremely hot nor cold. Always wear personal protective equipment when performing battery maintenance. And keep sparks, flames, and cigarettes away from all batteries.

Follow these simple steps for deep-cycle flooded, AGM, and gel batteries:

1. Charging

- Charge after each use, following manufacturer recommendations
- Ensure the electrolyte level is above the plates before charging (flooded batteries only)
- Tighten vent caps before charging
- Don't interrupt a charge cycle and never charge a frozen battery

2. Watering (flooded batteries only)

- Add water only after fully charging the battery (unless plates are exposed)
- Check with the manufacturer regarding proper electrolyte fill levels
- Never allow the electrolyte level to fall below the plates
- Only use distilled water and never add acid to a battery

3. Cleaning

- Tighten all vent caps before cleaning
- Clean the battery and cable lugs with baking soda and water
- Don't allow anything to get inside a battery
- Rinse with water and dry

4. Equalizing (flooded batteries only)

- Connect battery to charger, set to equalize mode, and start the charge cycle

Employee Training Videos
Management Training Videos

FREE CONTENT

Business Strategies
Cleaning Procedures
Cleaning Videos
Content Library
Customer Relations
Employees
Equipment and Products
Getting Started
Green Cleaning
Leadership
Pricing and Estimating
Safety
Sales and Marketing
Service Add-ons
Resources
Our RSS Feed

ONLINE STORE

Cleaning Certifications
Training Programs
Training Video
Classes / Webinars
Ebooks / Manuals
Coaching Services
Postcard/Flyer Templates
Cleaning Clipart

ABOUT US

About Us
Member Reviews
Affiliate Program
Help
Privacy Policy
Code of Ethics
Terms of Use

- Avoid direct exposure to heat sources, such as radiators or heaters

Other Notes

Track equipment use and maintenance by keeping a log for every piece of equipment. Keep notes of daily and routine inspections and cleanings, as well as any repairs. This log will help you remember to perform proper maintenance in a timely manner. It also allows house cleaners with employees to check entries when problems arise to determine if any employees need training.

Speaking of, trained employees can do some basic repairs. It's a good idea to have at least one person on every crew trained in the basic mechanics of every machine. When it comes to technical maintenance and expert repairs, however, these more complicated procedures should be left to qualified service professionals. Check equipment warranties carefully because some will be voided if anyone other than a service professional attempts machine repairs.

If you have a service agreement with the supplier of your vacuums, take full advantage of them. These contracts allow a house cleaner to call the vendor's technicians whenever something goes awry. If you hear a funny noise or smell burning rubber, you can catch a potential problem early and get it fixed without additional costs. This can save you money and time in the long run.

Finally, remember to budget for replacement costs whenever you purchase a new machine or tool. Eventually, every piece of equipment must be replaced no matter how well it's maintained. Build that cost into your budget so you're not hit with unexpected expenses. Being able to replace parts or machines as soon as they break will save you from lost productivity (and income).

Remember: First impressions matter. Dusty or damaged equipment may send a subtle signal to your customers that you're not running a professional operation. On the other hand, when customers see that your equipment is clean and well cared for, they'll know that you pay attention to detail.

In 2021, MyHouseCleaningBiz.com was part of an acquisition by Armando Bello, Ricardo Regalado, John Disselkamp, Michael Dahlke, Saul Marchan, and Juan Padilla. Comrades in the cleaning industry. Their goal is to continue to expand on the resources accessible to its members, provide a personalized roadmap for sustainable growth, and make a positive impact in the cleaning industry.

About Us -Vision - Mission - Story.

This page gives details of everything you get with membership

Go Premium!

Premium Membership with access to Clean Smart University

Watch the video tour by clicking on the image below

Visit this page for a complete list of member benefits

Related Articles

- 5 Steps to Choosing the Right Cleaning Products for your Home Cleaning Company
- 8 Reasons to Consider Switching to Pre-Portioned Chemical Packets
- Types of Cleaning Chemicals That Will Not Damage Surfaces
- Microfiber Mopping Systems: Safety and Economics Win Out Over Tradition

MyHouseCleaningBiz.com
420 N Wabash Ave
Suite 507
Chicago, IL 60611

Tel: 866-221-4490

Guide to Hygiene and Sanitation in Aviation. 3rd edition. Geneva: World Health Organization; 2009.

ANNEX F Routine aircraft cleaning schedule

The information provided in this annex is an example of a cleaning schedule for aircraft, written to assist those responsible for routine cleaning immediately after a flight or during a night stop. Although routine cleaning usually includes the use of disinfectants, as components of general-purpose aircraft cleaners, their routine application differs from that of an aircraft that needs disinfection after transporting a suspected case of communicable disease, for which separate guidance is provided in the text of chapter 3.

Cleaning and disinfection schedule

The aircraft operator's engineering department shall grant technical approval for each type of cleaning product used. Approved cleaning products are usually listed in the aircraft maintenance manual. Alternative cleaning products must be approved by the operator's engineering department prior to use.

1. General

1.1. Aircraft contamination

Should aircraft contamination be noticed (insects, liquids, etc.), inform the airline station manager. If an infective source is suspected, the source of infection (e.g. passenger) should be contained in order to minimize the risk of infection to others.

1.2. Handling of flight irregularities

The specifics of each flight irregularity situation will determine the course of action to be taken. However:

- Never compromise on safety.
- Coordinate actions taken with the airline station manager.

2. Interior cleaning

2.1. Classification of interior cleaning types

There are different types of interior cleaning, depending on time available; the following schedule is only an example, which may have to be adjusted to more specific operations. For operations having short flights, minimum service and short turnaround time, the requirement for cleaning between sectors is limited to very few of the procedures mentioned in the chart below.

2.2. Cabin cleaning

Cabin cleaning shall start immediately after passenger disembarkation is completed.

If transit passengers remain on board, cabin cleaning shall be performed so as to minimize passenger disturbance.

Cleaning of cabin windows inside shall be done only with an approved cleaning product and a non-abrasive cloth. Once the window is cleaned, rinse with water using a cloth and dry the surface.

Cloth-covered seats shall be vacuumed. Sticky objects shall be removed with a spatula prior to vacuuming. Stains shall be removed only with an approved stain removal product.

Leather-covered seats shall be cleaned using only an approved dusting product. Stains shall be removed only with an approved stain removal product.

Passenger seat control unit panels shall be cleaned using only approved cleaning materials and non-abrasive paper towels.

In-seat monitors shall be cleaned using only approved cleaning materials and a microfibre cloth.

Carpet stains shall be removed only with an approved stain removal product.

2.3. Interior cleaning chart

The following chart shows applicable cleaning and disinfection activities required for each type of interior cleaning.

“On request” cleaning activities shall be performed if requested by the operator flight crew, cabin crew or airline station manager.

Ashtrays require emptying and cleaning only if not permanently blocked.

Symbols: ✓ Standard ✦ On request

A: Stopover times under 60 minutes

B: Stopover times over 60 minutes

C: Overnight

Area	Services	A	B	C	Remarks
Flight deck	Empty waste boxes and ashtrays	✓	✓	✓	
	Clean crew tables and glass holders	✦	✓	✓	
	Clean stowage areas and racks	✦	✓	✓	B: As required
	Wipe seats	✦	✓	✓	Remove stains
	Clean floor / Vacuum carpet	✦	✦	✓	
	Clean flight deck windows inside	✦	✦	✓	
	Clean door and walls	✦	✦	✓	
Cabin	Dispose of waste from closets	✓	✓	✓	
	Dispose of litter and newspapers	✓	✓	✓	
	Dispose of waste in seat pockets		✓	✓	
	Collect and restow pillows and blankets (first, business class)	✓	✓	✓	Remove if soiled
	Fold and restow blankets in overhead bins	✓	✓		Remove if soiled
	Restow pillows in overhead bins	✓	✓		Remove if soiled
	Empty ashtrays		✓	✓	
	Clean tray tables and armrests	✦	✦	✓	
	Clean cabin crew seat tables	✦	✦	✓	
	Clean interphone surfaces	✦	✓	✓	
	Clean cabin windows inside			✓	
	Vacuum passenger and cabin crew cloth-covered seats		✦	✓	Remove stains
	Wipe passenger and cabin crew leather-covered seats		✦	✓	Remove stains
	Dispose of waste in overhead bins and wipe		✦	✓	

Area	Services	A	B	C	Remarks
	Clean overhead bins outside and latch handle surfaces	✦	✦	✓	
	Clean PVC floors			✓	A: As required
	Vacuum carpet		✦	✓	A: As required
	Empty and clean ashtrays			✓	
	Vacuum ashtray holders			✓	
	Collect and replace blankets			✓	
	Collect and replace pillows			✓	
	Collect and replace headrest covers			✓	
	Clean in-seat monitors			✓	
	Clean passenger seat/service control unit panels	✦	✦	✓	
	Remove passenger seat cushions and vacuum			✓	
	Remove stains from carpets			✓	
	Clean seat rails, cabin fixtures, air inlets, ceiling, sidewalls, closets, doors, service panels and magazine racks			✓	
Galleys	Empty waste bins and insert waste bags	✓	✓	✓	
	Clean doors, latches, ceiling, ventilation grids	✦	✦	✓	
	Clean sinks, faucets and working surfaces	✦	✓	✓	
	Clean retractable tables	✦	✓	✓	
	Clean ovens inside and outside	✦	✦	✓	
	Clean service trolleys	✦	✓	✓	
	Clean PVC floors	✦	✦	✓	
Lavatories	Empty waste bins and insert waste bags	✓	✓	✓	
	Clean toilet bowl and seat	✓	✓	✓	
	Clean basin, faucets and surfaces	✓	✓	✓	
	Clean mirror	✓	✓	✓	
	Clean change table	✓	✓	✓	
	Clean wall surfaces and interior and exterior door handles and locks	✓	✓	✓	
	Clean PVC floors	✓	✓	✓	
	Replenish soap dispenser	✦	✓	✓	
	Replenish toiletry items	✦	✓	✓	
Crew rest areas	Dispose of waste from closets		✓	✓	
	Dispose of litter and newspapers		✓	✓	
	Remove sheets, pillows and blankets from each sleeping berth		✓	✓	This step followed by next two in sequence
	Clean surfaces within each sleeping berth		✓	✓	
	Place clean sheets on mattresses and clean pillows and blankets in each sleeping berth		✓	✓	

Area	Services	A	B	C	Remarks
	Clean controls (for lights and ventilation, etc.) and interphone surfaces		✓	✓	
	Empty ashtrays		✓		
	Vacuum carpet				A: As required
	Clean any cabin crew seat tables		✓	✓	
	Clean any cabin windows inside		✓	✓	

If time does not permit completion of all of the above tasks, priority should be given to the removal of waste and cleaning where indicated, especially of galleys and toilets. To expedite cleaning procedures and to reduce the amount of equipment required, disposable swabs impregnated with effective and appropriate cleaning agents can be purchased or prepared in advance, stored in polyethylene bags and used for all wiping operations.

Galleys are extremely difficult to clean satisfactorily at times other than during maintenance checks, since they have many almost inaccessible areas in which foods and beverages—particularly the latter—can penetrate. The introduction of modules in wide-bodied aircraft is an improvement, but much more could be done to design a galley that would be easier to clean than the present type.

Problem areas

Aircraft cleaners need to pay particular attention to the following dirt traps and make sure that they are thoroughly cleaned out:

- catering equipment runners
- bar box recesses
- floor of catering container compartments
- sink drain pipes (frequently blocked)
- drinking-fountain wastes and bottle top remover recesses
- lavatory cupboards
- first-aid stowage holds.

Bookshelf ID: NBK310704

CLEANFAX
FOR CLEANING + RESTORATION PROFESSIONALS

pens in

2022 Wildfire Season Updates

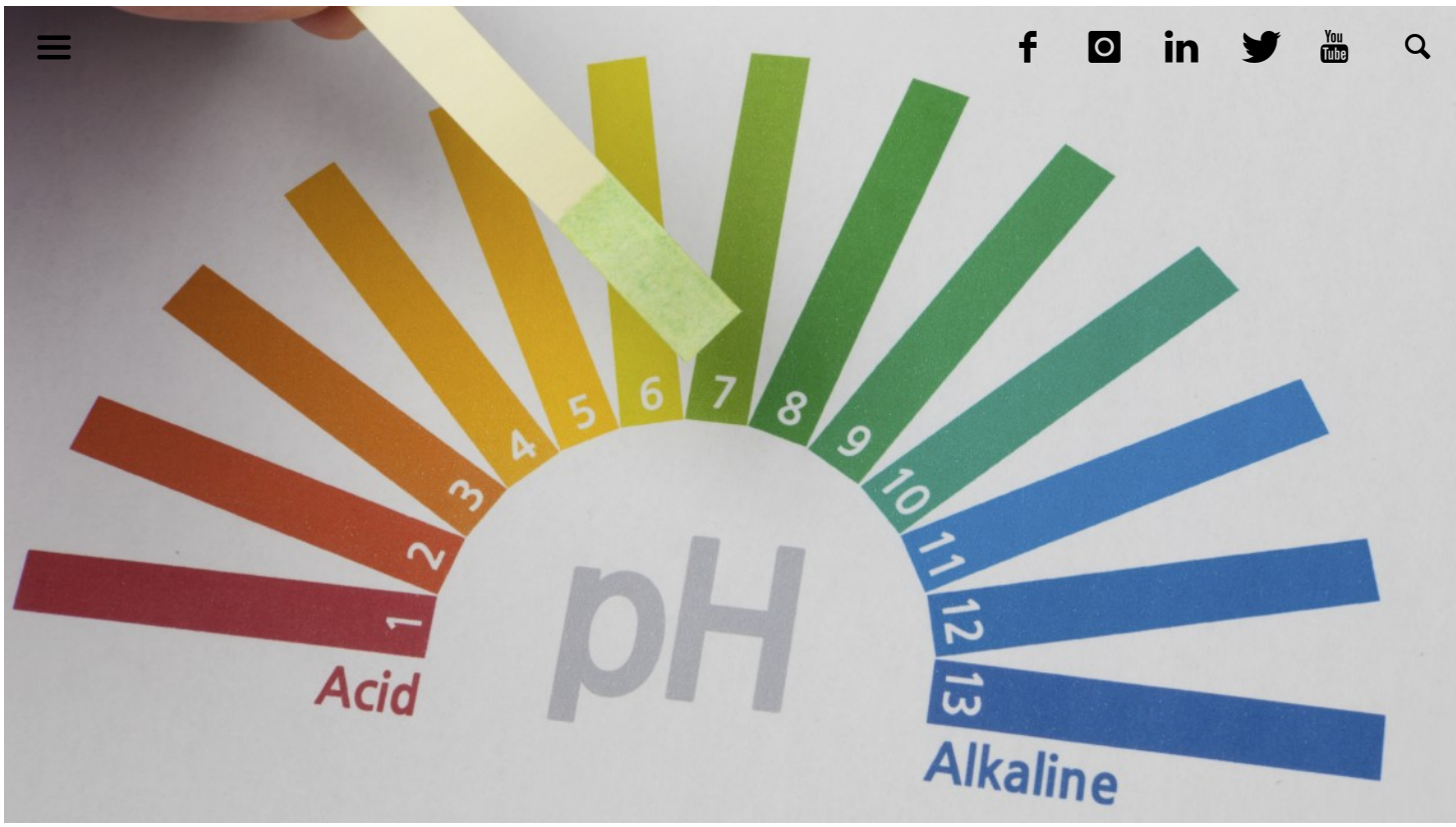
Leading With Trust, Transparency, and Teamwork

CARPET CARE

THE ROLE OF PH IN CLEANING

pH can be your friend or foe, depending on how you use your cleaning agents.

SHARE ON:



By Aziz Ullah

When chemicals are dissolved in water, the mixture's pH level can become either acidic or basic (alkaline). Vinegar and lemon juice are acidic substances, while laundry detergent and ammonia are basic. With a pH level of 7.0, pure water is neutral.

Acid and basic are two extremes that describe the property of a chemical, such as how hot and cold are used to describe the two extremes of temperature.

pH (potential of hydrogen) is the measurement of acidity or alkalinity of a substance when dissolved in water. Just as degree is used to measure precise temperature, pH gives us the precise measurement of acidity or alkalinity.

Mixing acids and bases can cancel out their extreme effects, much like mixing hot and cold water can "even out" water temperature. Extremely acidic or basic materials are called "reactive", and can cause severe burns. Examples include automobile battery acid, which is very acidic, and drain cleaner, which is very alkaline.

Unlike the temperature scale, the pH scale is logarithmic. In other words, each number is 10 times more powerful or less powerful than the next, or preceding, number. The pH of 8 is 10 times more alkaline than the pH of 7, and the pH of 9 is 100 times more alkaline than the pH of 7, and so on.

Buffer solutions

Buffer solutions are equilibrium systems that resist changes in pH upon addition of an acid or alkaline.

A typical system may consist of a weak acid, such as vinegar (acetic acid), and its salt, sodium acetate. When a strong alkali such as caustic soda is added, the weak acid reacts with the strong alkali, forming more sodium acetate without a shift in pH.

In the cleaning industry, the term “buffer” is generally used to describe cleaning products that resist change in pH when diluting with water.

pH cleaning factors

Protein fibers (wool and silk) will tolerate the absorption of a limited amount of mild acid, and cellulose will tolerate a certain degree of alkalinity; however, both can be destroyed by strong acids and alkalis. Strong acids and alkalis can also adversely affect dyes.

What is most important is to maintain a pH level that effectively cleans the surface, without damaging dyes or fibers.

Olefin fibers can withstand a high degree of alkalinity. Solution dyed nylon, polyester and acrylic fibers can tolerate moderate alkalinity. Stain resistant nylon, wool and silk are more sensitive to alkalinity and should be cleaned in the neutral pH range.

The cleaning chemical”s pH value can have a direct effect on cleaning effectiveness. Each detergent formulation has maximum effectiveness at a specific pH value. For example, an acid solution is needed to remove metal oxide, such as rust, and an alkaline solution may be needed to clean a heavily soiled, solution-dyed olefin carpet in a rental unit.

A close-to-neutral pH is needed to clean wool, silk or stain resistant fibers.

Choosing the proper pH

The critical component in selecting a cleaner based on pH is how fast it needs to work.

Most cleaning chemicals are alkaline in nature, since hydrolysis (saponification), chelation and dispersion of soils typically occurs most effectively at alkaline pH levels.

Other factors, such as time, agitation and temperature play essential roles in the cleaning process. Although more detergency is achieved with longer times, more agitation and higher temperatures, this should be balanced against the damage these higher factors will do to the carpet or fiber.

The higher the pH level, the more corrosive the cleaner and the more damage it will do to pH sensitive fibers and dyes; hot temperatures employed in steam cleaning, together with higher alkalinity, makes it even worse.

Alkaline cleaners work best when soil can be hydrolyzed, such as kitchen grease containing natural oils and fats, natural greases, body oils and some proteins.

How fast can an alkaline cleaner damage a fiber? For dyes, the damage can be instantaneous and generally not reversible; the same is true with stain resistant fibers. With indicator-type dyes, the change may be reversible; for the fibers themselves, such as protein or silk, the damage will be slower, but corrective action must be taken immediately.

Oriental hand-knotted wool carpet undergoes harsh treatment during the washing and finishing in the manufacturing process, where luster is attained by use of caustic soda and bleach in the presence of a mineral acid. So there is no room for error as the carpet or rug may have gained the sheen, but as a result has become very fragile.

The following is a table showing what types of soil that can be cleaned at a certain pH.

Type of cleaner	**pH range**	**Soils**
Mineral-acid cleaner	0-2	Heavy oxide scales
Mild acid	2-5.5	Inorganic salts, water soluble metal complexes
Neutral	5.5-8.5	Light oils, small particles
Mild alkaline	8.5-11	Oils, particulates, film
Alkaline	11.5-12.5	Oils, fats, proteins
Highly alkaline	12.5-14	Heavy grease/soils

Altering the pH of chemicals

If an attempt is made to lower or raise the pH (by using an acid or alkali) of the cleaning chemical without knowing the chemistry of a formulated product, the result can be counterproductive.

There could be ingredients in the product that only work at a particular pH, but may drop out, be rendered ineffective or may even hinder the cleaning.

The carpet or upholstery to be cleaned should be cleaned at the appropriate pH level that does not harm the fiber or the finishes.

If an alkaline product inadvertently is employed in cleaning wool or silk, the alkalinity must be immediately neutralized with a mild acid solution, such as a tribasic organic acid, which has three times the neutralizing ability of an alkali as compared to a monobasic acid. Moreover, being a mild acid, the chance of leaving the carpet or upholstery highly acidic is non-existent.

Aziz Ullah, Ph.D., MBA, is president of Fabpro Manufacturing, a formulator of carpet and upholstery cleaning products. He is a member of the American Chemical Society, senior member of the American Association of Textile Chemists and Colorists, and a member of The Textile Institute (UK). He can be reached at www.fabpro.com.

TAGS:
ONLINE ARTICLES

PREVIOUS POST

Cleanfax e-Newsletter: Air Duct Cleaning

NEXT POST

Get goal clarity!

RELATED POSTS

Leadership and Love

Quick Guide to Smoke, Heat, and Pressure Damage

Be a Student of Your Industry

11 COMMENTS

THE IMPORTANCE OF A SAFE MARBLE CLEANER | CLEANFAX

at — Reply

> [...] For some reference, pure water has a pH level of seven, so to increase the cleaning power of the cleaner, the manufacturers of safe marble cleaners typically increase the pH to somewhere between seven and 10. Since a mildly basic solution is safe, these cleaners have the right balance of pH to be safe but effective. For more information, see this article on the role of pH in cleaning. [...]

DECORATIVE CONCRETE FLOOR MAINTENANCE: 5 BASIC PRINCIPLES TO FOLLOW - WORTHVIEW

at — Reply

> [...] as the floor finish becomes marred, scuffed or dirty, you should clean it with a damp mop. Consider using a pH-neutral cleaner. Remember though that before using any cleaning solution, read and follow the instructions provided [...]

THE SEARCH FOR SAFER LAUNDRY DETERGENT FOR SILK AND WOOL | COMFORT SLEEP SANCTUARY

at — Reply

> [...] High pH is also good at removing body oils, grease, and some proteins. [...]

WHAT IS NATURAL (CHEMICAL FREE) RUG CLEANING? HOW DOES IT WORK?

at — Reply

> [...] straits, pounding out the dust will do the job. For something that's a little more intense, be aware of pH levels and how it interacts with your rug [...]

WHAT DOES IT MEAN TO HAVE A NEUTRAL PH? – DISINFECT TIPS

at — Reply

[…] The reason it is important to know the pH level of the cleaner you're using is that the pH can have an effect on the material you're cleaning. Strong acidic or strong basic cleaners can cause fabric dye to run or its sheen to be affected. Cleaners that work effectively that are closer to the neutral scale are considered safer to use with all materials. [For those in the soft surface cleaning industry, Cleanfax magazine published an excellent article in April, 2020 on The Role of pH in Cleaning. […]

NCS ORGANIC CLEANING IN COVID-19 PREVENTION. - NATURAL CLEANING SERVICES

at — Reply

[…] https://cleanfax.com/carpet-care/the-role-of-ph-in-cleaning/ […]

WHAT IS A NEUTRAL PH? - DISINFECT TIPS

at — Reply

[…] The reason it is important to know the pH level of the cleaner you're using is that the pH can have an effect on the material you're cleaning. Strong acidic or strong basic cleaners can cause fabric dye to run or its sheen to be affected. Cleaners that work effectively that are closer to the neutral scale are considered safer to use with all materials. [For those in the soft surface cleaning industry, Cleanfax magazine published an excellent article in April, 2020 on The Role of pH in Cleaning. […]

HOW TO CLEAN POLYURETHANE | SAWSHUB

at — Reply

[…] is also sensitive to extreme alkalinity. Always ensure that the cleaners have the label "pH neutral cleaner" or "neutral cleaner." If you can't get the right product, you can consult an expert for more directions. Such […]

THE SIMPLE SCIENCE OF NEUTRALIZING: HOW DO CHEMICAL NEUTRALIZERS WORK? - CHEMCRAFT INDUSTRIES IN CHICAGO IL

at — Reply

[…] or alkaline substance or solution to a neutral state, meaning a pH of 7 on the pH scale. This is a good article to read for some additional information on […]

CARPET CLEANING: CLEANING A SPILL – NWA RESTOREIT

at — Reply

[…] to note is that there is science behind carpet cleaning and using other chemicals can affect the PH balance and set the stain further into your carpet or discolor your […]

THE SIMPLE SCIENCE OF NEUTRALIZING: HOW DO CHEMICAL NEUTRALIZERS WORK? – MY WORDPRESS WEBSITE

at — Reply

[…] or alkaline substance or solution to a neutral state, meaning a pH of 7 on the pH scale. This is a good article to read for some additional information on […]

Leave a reply

Your email address will not be published. Required fields are marked *

Name (required)

E-Mail (required)

Website

Save my name, email, and website in this browser for the next time I comment.

Please enter an answer in digits:

7 + 15 =

Notify me of follow-up comments by email.

Notify me of new posts by email.

SUBMIT COMMENT

EXCLUSIVE CONTENT

EXPERT VIDEOS

UPCOMING EVENTS

ISSA Show North America 2022

POLLS

Does the recent monkeypox outbreak change the way you clean and disinfect?

- ○ Yes, we have adjusted to meet the challenge of this outbreak
- ○ No, we do not see a reason to react to this outbreak
- ○ Our standard cleaning and disinfection protocol is sufficient
- ○ N/A

Vote

View Results

- Polls Archive

Cleanfax provides cleaning and restoration professionals with information designed to help them manage and grow their businesses.

All images are credited to Getty Images or its affiliates unless otherwise noted.

MAGAZINE

- Subscriptions
- Customer Service
- Digital Edition
- Ask Cleanfax
- About Us
- Contact
- Advertise

RESOURCES

- Cleaning for Coronavirus
- Directory
- Events
- Classifieds
- Industry Links
- Totally Booked University
- Privacy Policy

TOP STORIES

THE 2022 EXPERIENCE S
HAPPENS IN VEGAS...IS F

READ MORE >

↑ Back to top

Cleaning: Carpet Care Cleaning: Floor Care

CleanLink minute

Three Types of Dirt To Clean

Cleaning is the process of removing dirt or unwanted matter. Dirt is any unwanted substance that winds up on a surface resulting in poor sanitation, possible slip problems and of course, poor appearance.

There are three main types of dirt: Loose soil, atmospheric soil, and spills.

The vast majority of the dirt we combat in buildings is loose soil which is easily dealt with so long as it does not become wet or contaminated with oils. The Carpet and Rug Institute estimates that over 80 percent of the dirt in a building is loose soil - most of which is tracked in on people's feet. This dry, gritty soil is the enemy of all floor surfaces. It scratches and dulls the floor finish. If left unattended, it can scour off the finish, just like a fine grade sandpaper. This soil can be very small. It is often measured in microns. The dot on this "i" is about 500 microns. A good HEPA vacuum filter will tackle particles down to .3 microns. While this soil can be very small, the damage it can do is great.

from things like pollution, auto fumes, and cigarette smoking. It is an oily type carbon based soil that clings to surfaces and is more difficult to remove. When combined with moisture and sunlight it can form harmful chemicals that will attack all the surfaces in your building. It is particularly harmful to floor finishes.

The third major source of dirt is spills. This can be anything from a tenant's morning coffee to a workman's shoes tracking in oil stains. Spills need quick attention to keep them from attacking your floor's finish coat since extended exposure will only damage the surface and require more effort to remove.

In the next articles we will take a more detailed look at maintaining hard floors.

Your comments and questions are always welcome. I hope to hear from you soon. Until then, keep it clean…..

Mickey Crowe has been involved in the industry for over 35 years. He is a trainer, speaker and consultant. You can reach Mickey at 678.314.2171 or CTCG50@comcast.net.

TIPS SELECTED FOR YOU

- Save Money With A Reduced Cleaning Approach
- Cleaning In An Open Office Environment
- Employee Engagement Improves Quality Of Cleaning
- Upgraded Contamination Control Protects Data Center Uptime
- Maintain Order With Environmental Monitoring Data
- Wrapping Up 2019 And Looking Ahead

Workplace Germs And How They Can Be Avoided

BSCs Benefit From Going Green

Cleaning Fights Back Against Bacteria

Business & Industry
Carpet Care
Cleaners & Disinfectants
Floor Care
Green Cleaning & Sustainability
Ice Melt
Infection Control
Restroom Care
Software