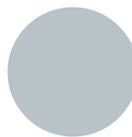
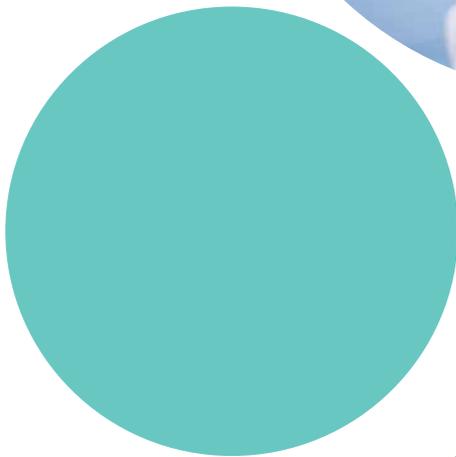
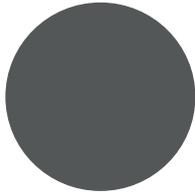
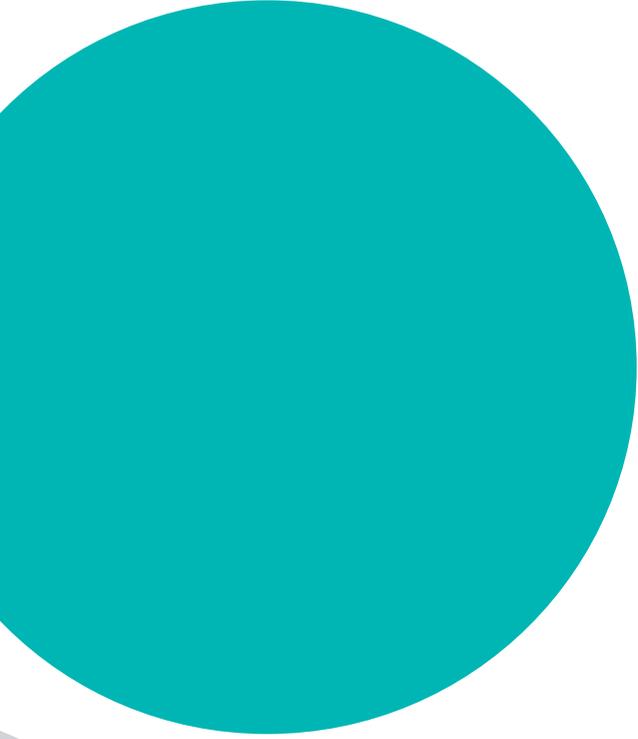




airandé

SUPERIOR DISINFECTION SOLUTIONS

THE FUTURE
OF DISINFECTION
IN DENTISTRY



Contamination: Risks to Dentists, Staff, Patients

Contamination in dental surgeries poses significant dangers to dentists and their staff, and their patients.

The dental practitioner operates in a cavity of the human body rich in infectious agents:

- The frequent presence of pathogenic bacteria in different parts of the oropharynx and the oral cavity (eg. *S. pneumoniae* group A, staphylococcus aureus, Haemophilus influenzae, meningococcus).
- The profile of susceptibility to antibiotics varies from one patient to another.
- The possible existence of viral infections (eg. Herpes simplex and other viruses), bacterial (eg. group A streptococcal angina) or fungi, in particular *Candida albicans*.
- The oropharynx can also harbor the agents responsible for sexually transmitted diseases (eg. *Neisseria gonorrhoeae*, treponem).
- The possible existence of low-to-pyogenic respiratory infections (*S. pneumoniae*, *Mycobacterium tuberculosis*).
- The possible contamination of the oral cavity with blood, during invasive procedures, which adds to the infectious agents present in the oropharynx, those possibly present in the blood such as hepatitis B viruses and C and HIV.
- The possible existence of a skin carrying of antibiotic-resistant bacteria or viral agents (varicella zoster, herpes).

The transmission of infectious agents in the dental office can occur:

- By direct contact with blood, saliva, pus, respiratory secretions or with the environment (system water).
- By indirect contact through the contaminated hands of the practitioner or assistant, contaminated instruments, equipment or surfaces.
- By air directly by inter-human transmission or via aerosols generated during treatment (blood, biological fluids, water).



What do the experts say?

Bennett et al (2000)¹ reported that dentists in general practice and their assistants have an increased risk of exposure to aerosolised microbial pathogens. For example, they are potentially exposed to a higher risk of exposure to *Mycobacterium tuberculosis* than the general public.

Monarca et al (2000)² observed that research has shown that infective hazards are present in the dental practice, because many infections can be transmitted by blood or saliva through direct or indirect contact, droplets, aerosols, or contaminated instruments and equipment. All dental personnel are at risk, including dentists, nurses, and hygienists.

Dentists and their staff show higher concentrations of serum antigen and antibodies for hepatitis B, hepatitis C, and Legionella spp, than the lay population and an increased prevalence of respiratory infections and symptoms possibly related to aerosols.

Practices to control infection should be a part of the organisation of every dental surgery.

Air, surfaces, dental materials and instruments, and water in dental units are vehicles for cross contamination with various microorganisms.

Infectious aerosols may be generated during dental practice and these have the potential to transmit infectious diseases through inhalation of these aerosols.

Microbial contamination of surfaces in dental surgeries includes hepatitis B surface antigen and hepatitis C virus (HCV).

Rautemaa et al (2006)³ Micro-organisms may also colonize dental equipment and water pipes,

and form biofilms on the surfaces. Sterilization processes have often been shown to be inadequate in dental primary care.

Bacteria and yeasts from the biofilms may produce aerosols in the dental surgery. Bacterial species such as *Pseudomonas aeruginosa*, *Pseudomonas cepacia*, *Legionella pneumophila* and *Mycobacterium chelonae* have been identified in biofilms.

The concentration of total bacterial aerosols has been shown to be clearly associated with clinical working hours in dental surgeries.

The area contaminated during dental procedures is far larger than previously thought and practically encompasses the whole room. Only items necessary for ongoing treatment should be out on work surfaces, and other items should be stored in closed cupboards.

Disinfection between patients should be made as easy as possible and should extend to all contaminated areas.

In general, dental surgeries should be seen more as operating theatres than offices in order to minimize the risks of cross-infection.

Dacraene et al (2008)⁴ found that *Propionibacterium acnes*, *Micrococcus luteus* and *Staphylococcus epidermidis* were frequently isolated in dental surgeries regardless of whether any clinical activities were taking place.

These findings highlight the *importance of preventing surfaces from becoming reservoirs of antibiotic-resistant bacteria* and thereby contributing to cross-infection in the dental clinic.

1. A. M. Bennett, M. R. Fulford, J. T. Walker, D. J. Bradshaw, M. V. Martin, and P. D. Marsh. (2000). Microbial aerosols in general dental practice. *British Dental Journal*. 189(12): 664-667
2. Silvano Monarca, Mario Grottole, Daniela Renzi, Corrado Paganelli, Pierluigi Sapelli, Ilaria Zerbini, and Giuseppe Nardi. (2000). Evaluation of environmental bacterial contamination and procedures to control cross infection in a sample of Italian dental surgeries. *Occup Environ Med*. 57:721-726

3. R. Rautemaa, A. Nordberg K. Wuolijoki-Saaristo, and J.H. Meurman. (2006). Bacterial aerosols in dental practice - a potential hospital infection problem? *Journal of Hospital Infection*. 64: 76-81
4. V. Decraene, D. Ready, J. Pratten, and M. Wilson. (2008). Air-borne microbial contamination of surfaces in a UK dental clinic. *J. Gen Appl Microbiol*. 54(4):195-203

How to Manage Contamination in the Dental Surgery

Airandé - the complete H₂O₂ Disinfection System that allows Dentists to:



Eliminate contamination from the dental surgery reduce the risk of contamination through bacteria, viruses, spores, yeasts, fungi, and moulds.

Reduce the risks of contamination to dentists, staff, and patients.

Use an approach to disinfection that is:

- broad spectrum in its action: bactericidal, virucidal, sporicidal, and fungicidal,
- environmentally friendly,
- compatible with most materials found in dental surgeries,
- efficient and cost effective, and that saves time and labour in their disinfection routine.

Why H₂O₂?

- ✓ Efficient (researched, developed, innovated, and validated by scientific tests and data).
- ✓ A full spectrum of disinfection activity.
- ✓ Eco-friendly, biodegradable: H₂O₂ decomposes into water and oxygen after use.
- ✓ Odourless.
- ✓ Not dangerous to users when used according to instructions.
- ✓ No residue effect.



H₂O₂ is More Effective Than Existing Disinfection Modalities

Summary of Disinfection Modalities:

	BACTERIA	YEASTS	FUNGUS	ENVELOPED VIRUSES	VIRUS	MYCOBACTERIA	BACTERIAL SPORES
ALDEHYDES*	●	●	●	●	●	●	●
ALCOHOLS	●	●		●			
PHENOLIC DERIVATIVES	●	●	●	●			
CHLORINE DERIVATIVES	●	●	●	●	●	●	
QUATERNARY AMMONIUM CATIONS	●	●		●			
BIGUANIDES	●						
PERACETIC ACID*	●	●	●	●	●	●	●
HYDROGEN PEROXIDE	●	●	●	●	●	●	●

*Aldehydes, Peracetic Acid, and H₂O₂ are the only full spectrum disinfection substances. But, not all full spectrum disinfection substances are safe:

- **Aldehydes** are highly toxic and irritating
- **Peracetic Acid** is corrosive, explosive at high concentration, malodorous, and must be handled with great caution.

Full Spectrum and Safe:

	BACTERIA	YEASTS	FUNGUS	ENVELOPED VIRUSES	VIRUS	MYCOBACTERIA	BACTERIAL SPORES
HYDROGEN PEROXIDE	●	●	●	●	●	●	●

This means H₂O₂ is the best alternative solution for disinfection

The Airandé Disinfection System

3 Objectives:

1

High-volume disinfection through airborne circulation of dry-fog of 5-15 microns in particle size (using Airandé DF-1 and 7.9% H₂O₂ solution).

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2

Manual disinfection between patients or between high-volume disinfection cycles (using Airandé 3.25% H₂O₂ solution).

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3

Disinfection and removal of contamination of the air by photo-catalysis (using the Airandé AP-13 air purifier).

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Innovation, Engineering, Science, Manufacturing and Distribution

The Airandé Disinfection System is the result of innovation in clinical and scientific settings. This has drawn on the expertise of the very best thinkers and practitioners in the disinfection world.

Airandé has its Principal Scientific Adviser in Belgium. Its Global V-P, Research and Development is also located in Belgium.

The Design and Engineering of the System has been done across three continents: Australia, China, and Europe.

Manufacturing of different elements of the system is done in Germany, Australia, China, and the USA. All of our manufacturers and suppliers are accredited to ISO 9001:2015. Some are also accredited to ISO 13485:2016.

Airandé maintains a QMS system which is currently being reviewed and audited to allow the company to be certified under ISO 13485.

Product development has also benefited from collaboration with universities worldwide. Airandé's focus on innovation, research, and development in the disinfection field is extremely important in achieving its goal of providing leadership in the science and management of disinfection. This means that Airandé will continue to work in collaboration with the leading microbiologists and disinfection scientists globally.



The Airandé Disinfection System

The Airandé DF-1



Ensures optimal surface disinfection after manual cleaning

Extended spectrum of activity to remove contamination from a wide range of sources including bacteria, viruses, spores, and moulds

Disinfects spaces between 5m³ and 165m³

Limited down-time of treatment room, operating theatre, dental surgery

Rapid diffusion: 11 min to 45 min

No volatile organic compounds

No residue

Ergonomic

Economical: 7ml/m³

Easy to use

- Reaches all surface areas
- Dry – not wet
- Captures and kills all sources of surface contamination – including bacteria, viruses, spores, and moulds

Traceability of use, date, operator, room ID, reason for disinfection: all downloadable through USB

Portable printer

The DF-1 comes with a easy-to-manage trolley. The DF-1 can be simply removed from the trolley and carried in a specially designed bag. This enables the operator to take the DF-1 into small spaces.

Airandé Solution 8

7.9% SOLUTION OF H₂O₂



Used in conjunction with the DF-1

Ready-to-use solution: no mixing or onsite dilution required

Single-use ensuring purity of product

No surface residue

No residual humidity

Biodegradable

No corrosion on most materials

Airandé Solution 3

3.25% SOLUTION OF H₂O₂



Used for manual cleaning of surfaces in between scheduled use of the DF-1

Ready-to-use solution: no mixing or onsite dilution required

No surface residue

Biodegradable

No corrosion on most materials

No trace of NH₄⁺, phenol, chlorine, biguamide, aldehyde, alcohol and VOC

The Airandé Disinfection System

Airandé AP-13 Air Purifier



The AP-13 utilizes needlepoint ionization, pulsating negative/positive ion field generator, corona discharge air freshener, and technology consisting of a special UV light and photo-catalyst target thereby creating an advanced oxidation plasma containing several friendly oxidisers.

The AP-13 is ideally suited for dental surgeries. Its plug-and-play, no-required-installation is an advantage, along with remote controls to prevent capricious settings changes.

The AP-13 can be used and kept on during patient treatment sessions. Many dentists will choose to have an AP-13 in each treatment room. Additional AP-13s can be installed in patient waiting areas, thus ensuring that air disinfection is constant throughout the dental practice.

Airandé H2O2 Impregnated Wipes



H₂O₂ impregnated wipes that enhance the manual cleaning of contaminated surfaces

The H₂O₂ penetrates deep into the surface materials of dental treatment units and ensures that contamination is eliminated even from areas that are not visible to the naked eye

What do you get when you buy an Airandé Disinfection System?

- 1 x Airandé DF-1
- 1 x Trolley DF-1-T (Fold-out work desk, Electrical cord, Portable printer)
- 1 x AP-13 Air Purifier
- 1 x Carry bag
- 6 x Bottles of Airandé Solution 8
- 12 x Bottles of Airandé Solution 3
- 6 x packs of Airandé BW-1 Wipes

2-year warranty on Airandé DF1, DF-1-T, and AP-13*

What do you get when you become a distributor of the Airandé Disinfection System?

A highly innovative product using leading edge technology

A competitively priced product

Backing of a company with expert knowledge about disinfection and bacterial control

Training in disinfection principles and protocols. And training in the use of Airandé disinfection products

*The catalytic reactor in the AP-13 has a warranty of 60 days. Otherwise the AP-13 has a warranty of 2 years.





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