



THE CAUSES OF INFECTIOUS DISEASES AND WAYS THE *GO GLASS HYGIENE SYSTEM™* INHIBITS THEM

Microorganisms (microbes) such as bacteria and viruses are all around us in buildings. These microbes develop, reproduce and spread to humans from interior glass and other surfaces.

Microbes that cause infectious diseases are biological agents called pathogens. Controlling infectious diseases depends, therefore, on inhibiting pathogens on the surfaces of interior glass and other materials.

Achieving this goal requires high standards of surface hygiene (cleaning and disinfection). The standard of surface hygiene depends mainly on three factors:

1. The type of pathogenic contamination, such as –

- **bacteria, which can be killed by disinfectants because they are living organisms.** Bacteria develop, reproduce and spread by themselves as long as they have nutrients, moisture and other factors specific to the type of bacteria. Otherwise they will die if not killed by disinfection.
- **viruses, which cannot be killed by disinfectants** because they are non-living or dormant. To become active, viruses must have a host in the form of an organic material such as bacteria.

Viruses are deactivated by killing their host bacteria. If a virus does not find a suitable host it will not become active.

The key to achieving high standards of surface hygiene, therefore, is inhibiting the development, reproduction and spread of bacteria. This is important for all the reasons outlined below, especially to avoid bacteria becoming hosts for viruses.

Note: for proven solutions see below.

2. Properties of pathogenic bacteria

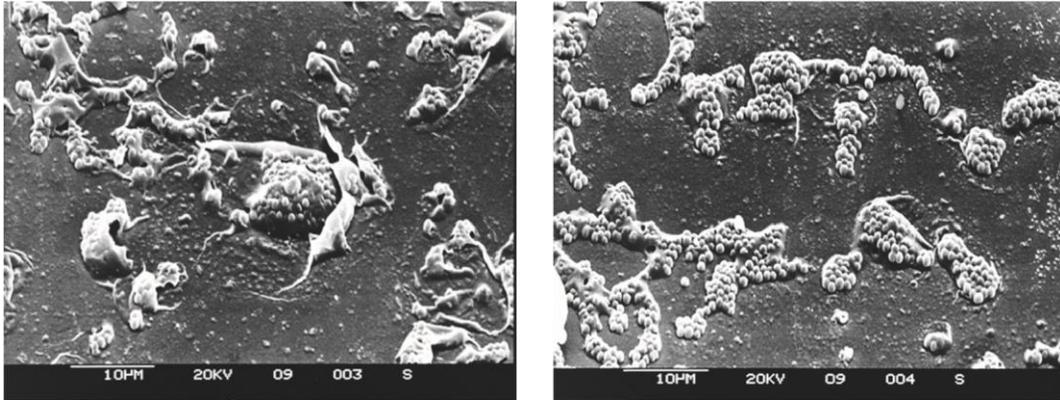
Because of their own properties, pathogenic bacteria cause real challenges in achieving high standards of surface hygiene. These bacteria:

- **are commonly referred to as “bad bacteria”** - because many other bacteria are non-pathogenic or “good bacteria”.
- **are living organisms** - developing and growing on their own as long as they have nutrients, moisture, and environmental factors specific to the type of bacteria;

- **reproduce through ‘binary fusion’** - a process where each cell of bacteria divides into two bacteria then multiplies exponentially.

As an example, when conditions such as nutrients and moisture are favourable some bacteria like *Escherichia coli* can divide every 20 minutes. This means that in just seven hours one bacterium can generate 2,097,152 bacteria. After one more hour the number of bacteria can rise to a colossal 16,777,216. That’s why we can quickly become ill when pathogenic bacteria invade our bodies.

3. **produce a ‘bio-film’ for self-protection and firm adhesion to surfaces**

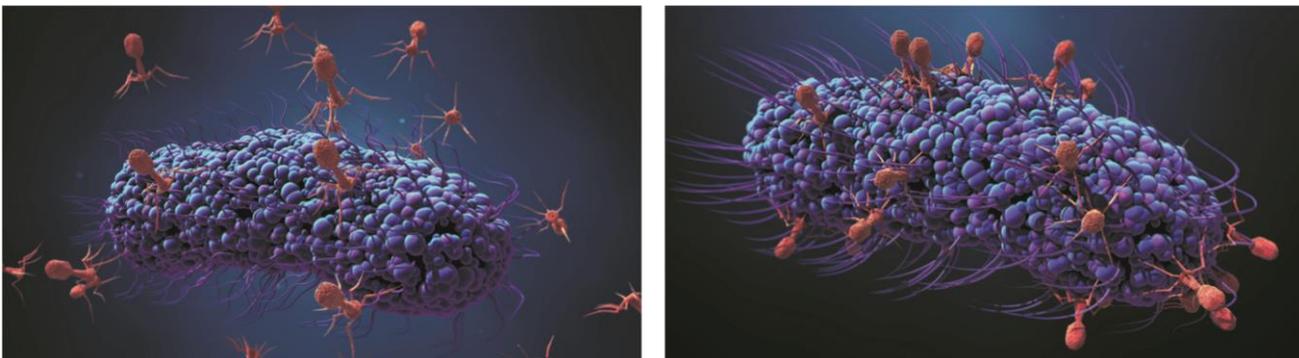


The micrographs above show bacteria forming biofilms that are very tenacious and “glue” bacteria cells to the surface, making removal by washing difficult.

- **live and grow on organic substances, including ‘black carbon’**. Black carbon refers to residues produced from emissions of petrol and diesel engine exhausts, known as “traffic film”, and numerous other sources including coal-fired power plants and gas turbine and diesel-electric engines in cruise ships. These emissions are circulated to interior surfaces of buildings, marine vessels and transportation vehicles through ventilation systems.

Bacteria, which are living organisms, feed on the black carbon. Viruses, which are non-living, need a host which is often bacteria. Therefore, attacking bacteria directly and viruses indirectly are a key to high standards of surface hygiene.

- **can be infected by viruses, producing ‘bacteriophages’**.

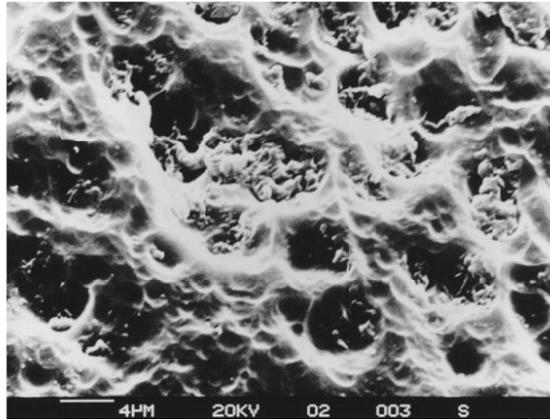


Bacteria, which are living organisms, serve as ‘hosts’ for viruses which are non-living or dormant, helping them to multiply and spread.

3. Properties of ordinary glass and other surfaces

a) **Ordinary glass** - when new, ordinary glass promises visibility, clarity and cleanability. Glass breaks these promises, however, because of the properties of its own surface:

a) **Microscopically rough** – Contrary to popular belief, the surface of glass is not completely smooth. Under a microscope, as illustrated below, glass reveals a rough surface made of peaks and potholes. These potholes provide hiding places for pathogenic microbes such as bacteria and viruses.



b) **Chemically reactive** – attracts and holds organic contaminants that provide nutrients needed for pathogenic microbes to live and grow.

c) **Water-loving (hydrophilic)** – attracts and holds moisture which is needed for pathogenic microbes to live and grow.

d) **Difficult to clean and keep clean** – because of all the factors above.

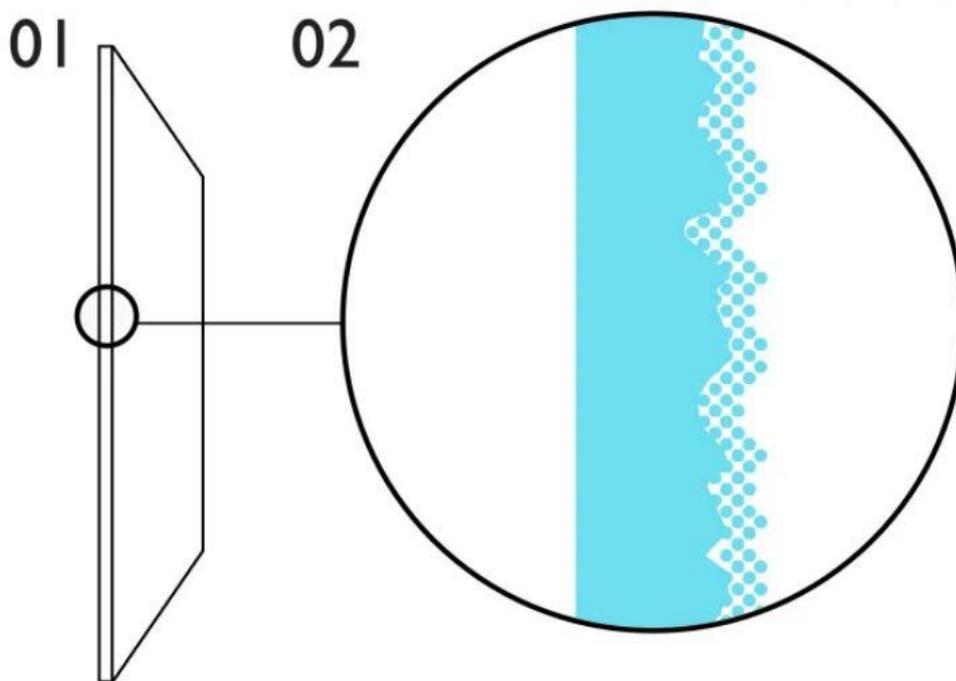
e) **Difficult to disinfect** – dirty and damp surfaces cannot be disinfected properly.

How does the Go Glass Hygiene System help?

The power behind the hygiene glass system for the renovation, protection and maintenance of glass is **ClearShield®**, a unique polymeric resin.

When applied to ordinary glass in liquid form, the system cross-links with itself and the glass to form a strong chemical bond that gives the glass both high-performance protection and durability, upgrading is completely transparent, chemically inert, non-hazardous and UV stable. Unlike a coating, the system becomes part of the glass so it will not peel, discolour or crack. Working like a 'non-stick' frying pan it prevents contaminants from bonding to the glass surface and limits further damage caused by corrosion and chemical attack. Cleaning is now easier without the need for harsh abrasives or methods – as well as saving time and effort.

Go Glass hygiene glass system performs like new for life following a recommended simple and economic after-care programme.



The hygiene glass system forms a chemical bond to the surface of problem glass to give high performance anti-microbial non-stick, easy clean protection.

Proven solutions for the challenges faced during the current situation

- **For new glass**, installations insist of Go Glass Hygiene Glass - the only glass with non-stick, easy-clean protection. Install [glass protection screens and cabinets](#) incorporating this glass.
- **For existing glass** - Upgrade your glass, contact us for details of on-site glass renovation service. DIY upgrade kits are also available coating 18-20 sq mts of ordinary glass.
- **For cleaning and disinfection of new and existing glass** - Disinfect all is a powerful and versatile all in one cleaner Works on most surfaces, including glass, metal, plastic, flooring, rubber and even upholstery. Disinfect-All™ is specially designed to work with Go Glass hygiene 'non-stick' easy-clean ClearShield® glass.* Disinfect-All™ is so powerful that it kills MRSA, HIV virus, Hepatitis B and C, C.Difficile and many other types of viruses, bacteria, algae and fungi!



Upgrade kits for 18-20 sq mts of existing glass £55.00 inc P&P



500ml trigger spray Disinfect-all £16.00 inc P&P



300ml refill concentrate £24.00 inc P&P

To order products please visit our online shop at <https://goglass.co.uk>. To discuss hygiene glass with our technical team, on-site renovation or new products including glass protection screens call us on 01223 211041.

30th April 2020