CHEMEX NETWORK ALERT
Technical Bulletin

BACTERICIDAL WASHING UP LIQUIDS

There is much confusion in the marketplace regarding:

- **Bacteriostatic** means ‘stops bacterial growth’ – examples are sulfamethoxazole which blocks nucleic acid synthesis or chloramphenicol which blocks amino acid synthesis. Such agents prevent bacteria reproducing but do not necessarily kill them outright - so they can still produce toxins and/or spoil foods.

- **Bactericidal** agents kill bacteria rather than just inhibit their growth. We tend to use quaternary ammonium compounds (quats) to do this in cleaning products but there are others such as triclosan which uses a chlorinated phenol (and so it is less soluble in water).

- **Antibacterial** means whatever you want it to. It is a woolly, non-specific term and does not carry the specificity or weight of the two alternatives above.

Washing Up Liquids are traditionally made using anionic surfactants. If you look on the side of bottles of domestic products you will find the ingredients listed in order of their concentration in the product. Anionic surfactants are top of the list. Liquids will also contain lesser amounts of non-ionic surfactants and sometimes amphoteric surfactants to give some synergy and improve washing performance.

These traditional products have good foaming properties due to the high anionic content. To obtain genuine bactericidal performance at a dilution of around 300 to 1 in wash up water it is necessary to include a bactericidal compound that will be effective and safe at these heavy dilutions. There are not many to choose from and by far the best – most effective and safe – are quaternary ammonium compounds (quats). An example of a quat is Benzalkonium Chloride and this is what we use in Safewash.

Quats such as benzalkonium chloride are cationic in nature and so cannot be mixed in formulations which contain anionic surfactants because they will react and cancel each other out.

Chemex Safewash is based on non-ionic surfactants which are compatible with the quat and gives good washing performance. A characteristic feature of the non-ionic surfactant is that it doesn’t foam so much as the anionics. So, Safewash diluted at 300 to 1 is bactericidal – and safe for food contact use. What other products can claim this? Ask to see the test reports!!

Some claims are made for washing up liquids – usually that they are ‘antibacterial’. This can mean that a different microbiology test has been carried out which tests for the minimum inhibitory concentration (MIC) – the concentration at which bugs are not killed but don’t multiply. The difference between inhibitory and cidal concentrations can be 100 fold. Simply adding quat to traditional anionic based washing up liquids will not work.

We are not aware of any “safe” biocides which can be incorporated into traditional (anionic) washing up liquids which are biocidally effective at dilutions of 300 to 1. There may be some biocides which could do the job but are not safe for food contact use and the neat washing up liquid would be probably be labelled “Harmful”, possibly sensitising to skin.

Some “antibacterial” washing up liquids can contain bactericides at a concentration which makes them bactericidal in the neat form or diluted up to maybe 2 or 3 to 1 with water. Higher quantities of these added biocides are not practical on grounds of cost, tainting, or harmfulness. This biocidal activity is not realistic or useful in practical washing up situations where washing up liquids are used at dilutions up to 300 to 1 with water.

With Safewash we have sacrificed some foaming while retaining good grease removal performance and exceptional, safe, biocidal properties. We also have had it independently tested against Staph, E. coli, Salmonella, Listeria, Pseudomonas and Klebsiella.

The word ‘bactericidal’ also has a psychological impact– people can get sloppy if they think the soap or liquid makes them invincible. So, there are a lot of very misleading claims made around the word ‘antibacterial’ – this has even been picked up by the Daily Mail: [www.dailymail.co.uk/news/article-1048400/Anti-bacterial-washing-liquids-better-ordinary-cleaners-watchdog.html](http://www.dailymail.co.uk/news/article-1048400/Anti-bacterial-washing-liquids-better-ordinary-cleaners-watchdog.html)

So, if a Washing Up Liquid has plenty of foam it is NOT truly bacterical, no matter what it says on the label as this defies the basic laws of chemistry and physics. If in doubt – ask to see the test certificates!