# Cosmetic Preservation at the beginning of the Twenty-first Century: Fact, Fiction and Folklore

Author: Chris Nichols, MGS MicroPure Limited, UK

## Abstract

The beauty care products of the twenty-first century are developed with an increasingly sophisticated array of exotic raw materials. Yet each formulation poses its own problems when it comes to walking the fine line between purely natural appeal and essential intrinsic product stability. When we look for effective natural active ingredients we accept that most plant-derived raw materials are readily biodegradable and that our beautiful, natural consumer-friendly cosmetics and toiletries need protection from equally natural (but not so beautiful) spoilage microorganisms. The chief tools we have for this purpose are listed in Annex VI of the Cosmetics Directive. A preservative system is often regarded as a necessary evil and preservatives themselves frequently attract bad press, much of it unbalanced and ill-informed, yet the reality is that we have a very limited range of options for the protection of personal care products and this range is likely to decrease, rather than increase.

One of the primary functions of the preservative system is to increase the safety of the product and this article discusses this against the background to some of the scare stories we have heard about these vital ingredients. It also argues that overreacting to unscientific or scientifically invalid scare stories by discarding “hot” preservatives in favour of other “safer” actives, can and will decrease the safety of the product in the short term, and the industry in the long term.

## The Role of the Preservative System

Since the second half of the last century we have demanded that our consumer products are biodegradable. Another way of saying this is that we deliberately formulate products that are capable of being chewed up by microorganisms. Although this is an essential feature of all modern consumer products, we would probably not appreciate it if biodegradation started in our bathroom cabinet. Yet during their lifetime, shampoos, creams, lotions and gels will repeatedly come into contact with bacteria and fungi that could use most of the ingredients as food. On these occasions it is the role of the preservative system to protect the consumer by preserving the integrity of the product. It prevents the growth of harmful microorganisms and keeps the product looking, smelling and functioning in the way which it was intended. It should not be used as a disinfectant in the manufacturing process; it is an aid to, not a substitute for Good Manufacturing Practice. This is important; it affects the level of the individual components we need to use in our preservative system.

**Fig 1. Effective preservatives allow us to use more natural ingredients in our products.**

## The Cost of Preservation and the Costs of Inadequate Preservation

For such an important ingredient, the preservative cost is very modest. Most preservatives cost between £2-£10 per kilogram. With typical use levels being 0.05% to around 1%, and the more expensive preservatives being used at lower levels, the cost to preserve one kilogram of shampoo is around one penny or less.