

A paper examining the
ethics of manufacture of
true environmentally
friendly/green cleaning
products

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GREEN CLEANING PRODUCTS

A paper investigating the ethics of the manufacture of true green/environmentally friendly cleaning products.

Introduction/Executive Summary

This report has been independently commissioned to examine the credentials of green/environmentally friendly cleaning products, to reinforce tangible proof of their effectiveness and dispel some of the myths expounded by commentators who may not actually find themselves to be in possession of the full green facts prior to presenting their arguments.

This document will discuss:

1. That only cleaning products containing the correct ingredients should and can be labelled green
2. That products must be efficiently and cleanly manufactured in an approved manner within an environmentally appropriate and quality factory to qualify for their green labelling
3. What ISO14001, the environmental management standard, means
4. The “natural” versus “synthetic” argument
5. Guidance from the top in terms of the UK Chemicals Strategy and UK Chemical Stakeholders Forum
6. Responsible manufacturers and their commitment to an ethical environmental policy for production of their products
7. The constituents of a typical green range
8. Support for the view that the Ecolabel Detergent Ingredient Database is fundamentally flawed.
9. That green products do actually work
10. The way that products are used (by the end-user) which can impact upon their green credentials

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Examining the Integrated Pollution and Prevention Control (IPPC) and the European perspective

In the context of green/environmentally friendly cleaning products, it is important to first examine what defines green cleaning.

The basic goal of green cleaning is to utilise products and methods that maintain a healthy environment. However, green cleaning can have a number of interpretations with issues that this report intends to examine:

It is also worth noting that the terms “*biodegradable*” and “*non-toxic*” don’t always have a fixed, or for that matter, legal definition (and can actually sometimes even be false!). Some ‘*natural*’ products can contain as many bad chemicals as they do good ones. Similarly, by the very nature of what they do, it would be foolhardy to assume that a cleaning product can be completely harmless to the environment.

However, safer alternatives are now nearly always available to some of the traditional chemical constituents of modern-day cleaners, particularly if used as concentrates with their smaller chemical volumes.

The cleaning industry as a whole is now moving steadily towards a much higher green / environmental awareness and usage. There has been a gradual acceptance of concentrates and subsequent systematic dilution - this implies less chemical content and a lessening of impact on the environment, not only through a consequent lower usage, but also through a reduction in the amount of packaging and transport to get them to both factory and to consumer.

The recent introduction of the IPPC regulations are helping to push companies towards ISO14001 compliance in relation to their duty of care for the environment. These regulations also demand the “best available technique” (BAT) for cleaning industry companies when it comes to waste disposal. Being proscriptive by nature, the breaking of these regulation can see companies being fined, having the permits revoked and in particularly severe cases, facing criminal negligence prosecution and even a jail sentence.

The IPPC Directive recognises that industry throughout Europe is responsible for a proportion of European-wide pollution. As such, industry needs to not only be held accountable for that pollution, but should actively seek, under legislated control, to minimise, if not eradicate it completely. The Directive of 1996 presents a set of EU-wide common rules to permit and control industrial installations.

Both new and existing installations which have been, in the words of the IPPC, “*subject to substantial changes*” have been required to meet the IPPC Directive since 30 October 1999. Other existing installations must comply by 30 October 2007, the deadline for complete implementation of the IPPC Directive.

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The IPPC Directive sets its stall out with four main guiding principles that must be adhered to.

1. Having an integrated approach

This means that the environmental performance of the plant **as a whole** is taken into account when assessing the level of protection it offers to the environment – it must strive to ensure this level is the highest possible. The performance within the plant includes:

- the use of raw materials
- energy efficiency
- the generation of waste and other by-products
- emissions of any description into the air, onto land and water
- noise levels
- restoration of the site after a closure
- health and safety

2. Using best available techniques (BAT)

'best available techniques'

means using the most effective, advanced, current methods available. The ultimate aim is to reduce emissions and the impact on the environment as a whole.

'techniques'

include both the technology used and the way in which the installation is designed, built, maintained, operated and, if required at some stage, decommissioned. These techniques should be utilised under economically and technically viable conditions, taking into consideration the costs and advantages.

'best available'

qualifies using the most effective in achieving the highest general level of protection of the environment as a whole.

3. Being flexible in their approach

The IPPC Directive allows a certain flexibility for licensing authorities to determine permit conditions. They can take into account:

- i. the technical 'characteristics' of the installation
- ii. the installation's geographical location
- iii. the conditions in relation to the environment locally

However, this flexibility is a two-way 'partnership'

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4. Utilising public participation

The Directive ensures that the public has the right to participate in the decision making process and to be informed of any consequences, and to:

- i. have access to permit applications in order to enable an opinion to be formed
- ii. see the permits granted
- iii. see the results of the monitoring of releases
- iv. have access to the European Pollutant Emission Register (EPER) - this is a register of emission data reported by EEC member states. It provides environmental information on major industrial activities and is to be replaced for the 2007 reporting period onwards by the European Pollutant Release and Transfer Register (E-PRTR).

IPPC application guidelines and criteria

Operators of installations under IPPC have to apply for a permit from the Regulator (the Environment Agency or Local Authority) prior to operation. The applicant must consider all the environmental impacts associated with the installation when preparing the application.

A copy of the application will be placed on a public register, held in the local office of the Environment Agency and the Local Authority, which the public is free to view.

Applications for permits have to undergo a public consultation; the operator is required to advertise the application in one or more local papers and in the London Gazette. Statutory Consultees and the public are required to submit their comments during the consultation process.

Once the consultation period is over the Regulator considers all the representations reviewed and will either grant the permit subject to conditions or reject the application. If an operator is dissatisfied with a decision made regarding an application, an appeal to the Secretary of State can be made.

If a permit is granted, the Regulator must ensure that the following general principles are adhered to;

- ◆ All appropriate preventative measures are taken against pollution, in particular through application of Best Available Techniques⁴
- ◆ No significant pollution is caused.
- ◆ Waste production is avoided and where waste is produced, it is recovered. Where that is not possible it is disposed of in a way producing the least impact on the environment, if any impact is produced at all.
- ◆ Energy is used efficiently.
- ◆ Measures are taken to avoid accidents and limit their consequences.
- ◆ Necessary measures are taken on the closure of an installation to avoid any pollution risk and return the site to a satisfactory condition.

Once a permit has been granted, under IPPC operators have significant responsibility for monitoring emissions and supplying the Regulator with data required to check compliance with the permit. The Regulator has to undertake independent monitoring and inspections of the installation to check compliance with the set emission limits.

Specific conditions may apply to individual installations that the Regulator considers appropriate to ensure a high level of protection to the environment as a whole. If the Regulator believes that the operator is breaching the conditions of a permit, enforcement options are available where: enforcement, suspension or a revocation notice can be served (the operator may appeal against this to the Secretary of State).

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However, note must be made that the original IPPC document has since been amended twice as follows:

1. Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003. This provides for public participation in respect of the drawing up of certain plans and programmes relating to the environment. It amends Council Directives 85/337/EEC and 96/61/EC (in reference to public participation and access to justice). It in essence reinforces public participation

2. Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for allowing greenhouse gas emission trading within the Community, and amending Council Directive 96/61/EC

Implementation measures

Member States have each chosen their own approach to the implementation of the IPPC Directive. The single biggest differentiator is between permits issued on a case-by-case basis. However, the Directive **is** being applied with gravitas.

The official guidelines for applying for an IPPC Permit in the UK as laid down by the Department for Environment, Food and Rural Affairs, were outlined on the previous page.

The Commission is currently carrying out a review of the IPPC Directive. However, this review will not affect the Directives already in place for requirements that need to be fulfilled by both Member States and their industries before 30 October 2007.

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ISO14001

ISO 14001 was first published in 1996 and specifies the actual requirements for an environmental management system. It applies to those environmental aspects which the organisation has control and over which it can be expected to have an influence.

In order to gain the ISO14001 environmental standard, companies must:

- ◆ provide the highest level of protection possible not only for their immediate surrounding environment, but for the environment as a whole. Where this may be impractical, they must have further committed to reduce emissions into the air and water and onto the land
- ◆ they apply best available techniques (BAT, see page 3) in the prevention of pollution and ensure that no significant pollution is caused
- ◆ minimise their waste production
- ◆ use energy as efficiently as possible
- ◆ prevent accidents and completely limit the consequences should anything unforeseen occur
- ◆ when a product line or activity ceases, to avoid any pollution and ensure the site used is restored to a satisfactory state

Of course, despite the above, the Environment Agency keeps a watchful eye on activities at the manufacturing company, which has to further ensure that:

- ◆ prevention and reduction (through a comprehensive and concise description of activity) is maintained for any non-environmentally friendly activity
- ◆ the company informs the Environment Agency on the robustness and reliability of monitoring data to ensure compliance
- ◆ the environmental performance of any equipment used for any abatement process is appropriate

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The General Concerns of “Natural” versus “Synthetic”

Much mention has been made in recent times of the use of “*natural*” ingredients in both the specification and formulation of products.

Added to this is the popular misconception that ingredients from “natural” sources might be of better quality than those from a petrochemical source in relation to human and animal safety, toxicity in water, how they biodegrade (break down in the earth when disposed of) and their overall sustainability.

Andrea DesJardins of the “Health and Environment Resource Center” (www.herc.org) defines ‘*natural*’ as “produced or existing in nature”, ‘*artificial*’ as “made by human work” and ‘*synthetic*’ as “produced by chemical means/synthesis and not by a natural process”.

However, she takes these definitions a very useful step further by indicating there are two types of products that can in fact carry the natural label:

- ◆ “*products that use natural materials to produce a product or products that would appear on its/their own without humans being involved*”, which is actually the true definition of natural.
- ◆ “*products made from natural ingredients that would not otherwise exist on their own, without human being involved.*”

When claiming “*natural*”, it is vitally important to quantify the exact ‘*naturalness*’, rather than fudge the issue expecting the consumer to make their own decision. This is sometimes where the anomaly of “*natural*” in terms of environmentally friendly/green products can occur.

As an example, if wanting to cite a natural product made from natural ingredients, ale is a good example. It is made from barley malt, yeast and hops, all naturally occurring products, yet with the intervention of humans to simply make the mixture more palatable, and in today’s society, of course more saleable.

However, an example of an artificial product made from natural ingredients would be the humble pizza - although a home-made pizza would include all natural ingredients, there is no way a pizza can occur naturally. It requires people to produce it.

And of course, to make matters even more complex in terms of definition, many of the chemicals used to make completely synthetic products do occur in nature.

But any natural product must be examined on the basis of its individual merit and not whether it is plant-derived or ‘petrochemical’-derived. As a further example,

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decaffeinated tea and coffee are both made with Ethyl Acetate, yet that doesn't prevent us enjoying it.

Neither does the poison found in potatoes (from Solanidine Alkaloids) prevent us from enjoying chips, or for that matter the nasty natural chemicals found in alcohol or cigarettes prevent many from enjoying a drink or a smoke!

As with everything, the chemical effect varies with the amounts used, where a dose at one level may be harmless or even beneficial (aspirin, for example) but a higher dose could be very harmful.

Because something can't be confirmed as 100% safe does not mean it is 100% dangerous!

Examples of natural products that are in fact harmful:

Those garden plants that contain natural toxins to guard against being eaten and as a result are extremely poisonous to humans.

The chemicals found in nature that protect, for example, trees from rotting in the ground. These would not meet the biodegradable standards laid down in relation to surfactants for the cleaning industry.

Damaging the biodiversity by, for example, clearing rainforests (or native forests nearer home) to pave the way for plantations of other products not necessarily natural to the area.

Fossil fuel usage out of proportion for producing the energy needed to provide renewable materials

There are green/environmentally conscious cleaning product manufacturers who make a natural claim, but whose products are not 100% natural. These cleaning product manufacturers are well aware that by defining "*natural*" on their label, they can state "*from natural sources*" or "*containing no synthetic ingredients*" on their product packaging and actually remain within the law, even though the product or products may fall between the two "natural" parameters as mentioned previously.

Consumers increasingly look to the contents on the product label, which they assume have been proscribed by law when trying to establish the "*greenness*" of the product.

As a result of this, they lose out because, although they are effectively being informed, they are only being informed within the letter of the law rather than ethically.

However, there is an added complication. Ingredients listed on a label may consider the '*starter ingredients*' (barley, yeast and hops in an ale) or the resultant reaction following

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the addition of constituent ingredients together.

On the scientific side, scientists very much believe that suspect chemicals must be monitored and the dangerous ones phased out. The concern is that green groups often play on what Roger Highfield, Scientific Editor of the Daily Telegraph, terms as “*the chemical illiteracy of the public*” to highlight their campaigns.

One of the problems facing manufactures is that synthetic products are often perceived to be more effective than their all-natural counterparts, one of the reasons there are so many synthetic products in use today.

However, this is sometimes at a sacrifice to the method of manufacture, where the process may necessitate the use of a hazardous or toxic ingredient which in turn may put humans, animals or the environment at risk

Also, care has to be taken when using natural ingredients, as true green manufacturers have sometimes discovered that in the process of manufacturing natural products, these have been found to sometimes contain as many ‘bad’ chemicals as ‘good’ ones!

However, the argument here still lies firmly in favour of using an all-natural product when effectiveness and toxicity levels are almost equivalent.

While in some cases, products whose bases originate from synthetic ingredients may be more superior, the massive investment in research and development by these true green companies has proven that it is possible to produce a superior cleaning product without compromising the environmental/green aspect.

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Guidance from the Top

So, it would seem that in a bid to avoid complete confusion and mistrust on the part of the public for that which is environmentally friendly/green and natural, that which might be environmentally friendly/green and synthetic, that which might be harmful to the environment and that which might not be harmful to the environment (or any combinations of the aforementioned), ground-rules had to be set.

At the 2006 British Chemical Industry conference, Pete Woodhead (technical director of Selden Research Ltd, a company at the forefront of green manufacturing processes) presented a keynote address on both his concerns and hopes for the future of the chemical cleaning industry. He outlined a logical analogy about the confusion that has surrounded genetically modified food.

A similarly confusing message could be generated by the chemical cleaning industry, where buyer specifications, if left unchecked, could easily cloud the issues and damage the emerging environmental profile of the industry as a whole. He stressed the need to examine not only how the products are made, but also how they are used.

He feels there is an easy solution to hand, provided it is acted upon in a logical and progressive manner.

In 2004, the European Commission published a handbook aimed at the public sector regarding the purchasing of green products and services. Side by side with this also saw the publication of the Detergents Regulation which came into force in October 2005.

The UK Chemicals Strategy was developed in December 1999, and led to the UK Chemical Stakeholder Forum (CSF) being set up in September 2000.

The main function of this forum is to advise to the Government how best industry can reduce the risks from hazardous chemicals to both the environment and to human health. The Forum has a broad membership drawn from industry, environmental, animal protection and conservation groups, trade unions, consumer groups and of course the scientific community.

It advises on:

- ◆ Concerns from the public about chemicals in the environment
- ◆ Identifying and assessing chemicals that are considered to cause serious if not irreversible harm to the environment
- ◆ Proposals from industry to reduce and eliminate these risks

Furthermore, during the past two years, the UK's major cleaning chemicals manufacturers have been working together to produce their own 'green' buyer's guide -

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these manufacturers are members of the two relevant trade associations BACS (the British Association for Chemical Specialities) and the UKCPI (UK Cleaning Products Industry Association).

This Task Force alliance produced their own “*Guidance for Responsible Public Procurement of Cleaning Products*” . This was as a pro-active response the publication of the European Commission handbook. It was very much to do with the fact that local authorities are large purchasers, and as such, in their capacity as major specifiers, sometimes, despite their best intentions, lay down ill-founded, contradictory or even technically unfeasible criteria guidance on “*environmental aspects of cleaning product ingredients*”.

However, it must be borne in mind that the guidance covers the environmental impact of the ingredients only.

Manufacturers/producers are able to utilise good product design and manufacturer. There are other factors, entirely under the control of the end user, which not only must be considered, but also have a serious green implication. These include:

- using accurate dosing to prevent waste
- using concentrated product where available to reduce transport costs and waste
- using manufacturer specified temperatures for products

It must be stressed that local authorities and public bodies are by no means ‘villains of the peace’ or being singled out for particular attention. As mentioned, it is simply because of their specifying and purchasing power and the enormity of the cleaning process they are involved with on both urban and rural levels.

Also, local authorities are aware of the often quite large environments they have to clean. They are the ones who have recognised that cleaning products can present a potential hazard to health and environment.

They have similarly recognised that, by switching from traditional cleaning products to those of low toxicity and high biodegradability, they can dramatically improve their environmental profile for even the simplest of cleaning jobs.

Some have even found that green cleaning products can actually reduce costs and improve productivity.

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The Environmental Policies of responsible manufacturers

Some, more than other cleaning product manufacturers, are fully aware of environmental responsibilities and accepts that their business activities can have an indirect/direct impact on the environment. They should constantly endeavour to achieve best practice with their industry.

In setting out their environmental objectives, they need to make it clear that their company directors are, for example, firmly committed to providing any resource required to implement, control and review the management of their environmental responsibilities. They should continually appraise, review and invest to enable staff to adopt and attain environmental objectives and targets.

They should also similarly encourage their suppliers and other third parties associated with their business to adopt similar best practices.

The descriptive statements for their products should indicate that:

- ◆ No harmful solvents are included
- ◆ No animal testing of the finished product
- ◆ No strong acids are used
- ◆ No caustic ingredients are used
- ◆ Minimal impact on the environment results from usage of the product
- ◆ Sugar-based or natural⁹ ingredients are used wherever possible
- ◆ Manufactured by an ISO 14001 approved company
- ◆ Their range complies with all current and future known environmental legislation

They should also consider installing a “bulk storage tank farm” on their site, in order to utilise efficient bulk delivery systems to reduce the use of both packaging and fuel. These tanks can store most of the required raw materials. A programme of super-concentrates will mean that minimum transport and packaging is involved for large contracts.

These companies should adhere to continuous research and development to help ensure their products are produced ethically, with the aim of maximising biodegradability, coupled with the lowest toxicity and optimum skin tolerance.

(Research has found that some companies work hard to ensure their products biodegrade quickly and completely, and are supported by a policy of formulating products which pass or exceed the criteria of the Detergents Directives of 2004 and 2006)

By law, surfactants (which will be discussed later) used in cleaning products must be biodegradable. However, there are some companies who rely on marketing “spin” when defining the biodegradability of their products - these terms, used in isolation for

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marketing purposes, are in effect meaningless without authentication. In order to offer products with truly biodegradability qualities, some terms that should be excluded include:

- ◆ Quickly biodegradable
- ◆ Rapidly
- ◆ 100%
- ◆ Completely
- ◆ Totally
- ◆ Ultimately

While researching this document, it was found that not many companies could claim 99% of their products had been proven to exceed biodegradability as specified by the Detergents Directive.

So what and how is a constituent, in particular a “surfactant” biodegradable?

Firstly, we need to examine what a surfactant is.

The term surfactant is a blend of "**surface active agent**", which was originally coined by Antara Products in 1950. Surfactants are usually organic compounds that are amphiphilic, meaning they contain both hydrophobic groups (their “fat-loving tails”) and hydrophilic groups (their “water-loving heads”).

Therefore, they are soluble in both organic solvents and water. Surfactants act by reducing the surface tension of water by adsorbing at the liquid-gas interface. They also reduce the interfacial tension between oil and water by adsorbing at the liquid-liquid interface.

To help simplify the above technical definition and explanation, it is prudent in terms of this document to simplify it by example as follows.

The most familiar, simple and demonstrative of all surfactants is soap, currently the most used and accounting for about 30% of the surfactant market, Where the air-water interface meets, we see soap produce foam.

Its activity at the water-oil interface makes it transfer dirt on plates into the soapy water.

We often see pictures or cinematic representation of a scene where our ancestors were seen washing clothes in a stream. They were probably assisted by one of the natural occurring soapwort plants, which although not actually recognised by them at the time as surfactants, were simply seen as plants that helped get their clothes clean!

The merits of using these products were very much the same to our own present use of

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modern-day detergents.

Surfactants, namely soap, have been 'manufactured' from about 1500BC - ancient Egyptians combined animal and vegetable oils with alkaline salts to create a soap-like substance - although there are records regarding soaps dating back to Babylonian times in 2800BC.

According to Tony Hargreaves of the Royal Society for Chemistry, the modern equivalent surfactants are of many more chemical types and do much more than just produce soapy bubbles and help disperse grease.

Aside from their 'cleansing' function, they can also contribute to wetting, lubrication, emulsifying, solubility, foaming/de-foaming and surface conditioning actions. Specialist manufacturers also combine them with other ingredients - thickeners, foaming/de-foaming agents, alkalis and salts etc, to produce the cleaning products we know today.

However, the modern cleaning product relies mostly on man-made/mixed (with some natural exceptions) surfactants.

It is not within the scope of this document to explain how surfactants work.

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A typical Green Range

There will always be some queries raised regarding environmental claims for green cleaning product ranges.

Any argument seems to surround the comparison between formulations used by manufacturers in relation to the criteria laid down by the EU for their 'flower ecolabel'.

However, there would appear to be several flaws in this approach.

Independently set and prescriptive ecolabelling schemes are not the most suitable for complex formulated products where, particularly in the case of the use of cleaning products where the end user has a major effect on that use.

The EU criteria are weighted towards ingredients to the exclusion of how they are used by the end user - especially when recommended dosages, dilutions and temperatures as specified by carefully researched instructions, are not adhered to.

Research has found that the Ecolabel Detergent Ingredient Database list is itself unsound.

It relies on the amount of test data available rather than scoring each ingredient on its relative toxicity, which leads to the strange scenario of more toxic ingredients being seen as ideal, simply because more is known about them.

The aforementioned point has been raised with, and ignored by, the Ecolabel Board, leading to ignorance of industry views and fundamentally inadequate resultant criteria being laid down prescriptively by people who are often not qualified to do so.

Looking at a selection of green/environmentally friendly cleaning products from an ISO14001 registered manufacturer, the following negative statements issued regarding the credentials of those products were found to be unsound and a cause for concern:

Some ingredients are environmentally toxic.....

1. The EU Existing Chemicals Programme* assessed Nitro Tri Acetate (NTA) and found there were no issues regarding its impact on the environment (an example of ecolabelling not in accordance with EU assessment criteria). The human assessment from the same programme is still awaiting publication.

* In order to enable the New Chemicals regulation to function, all chemicals on the European market between 1st January 1971 and September 1981 were listed in the European Inventory of Existing Commercial Chemical Substances (EINECS).

2. The other ingredients (including biocides) are dosed in low levels with a high

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degree of performance benefits. They are all effortlessly biodegradable and any high aquatic toxicity will be removed during the sewage treatment stage.

High performance ingredients in low concentrations are far preferred to ineffectual ingredients in higher levels.

Those ingredients are not totally biodegradable.....

Completely untrue and unfounded.

*Some products contain VOC's (Volatile Organic Compounds **) so are flammable... ..*

** Organic chemical compounds that have high enough vapour pressures under normal conditions to significantly vaporize and enter the atmosphere.

Products containing VOC's are by no means all flammable as it is totally dependent on their concentration. All products containing VOC's are thoroughly tested for flammability.

Excessive VOC's can be environmentally unfriendly, but are often essential for a product. A comparison to determine relative levels of VOC's is paramount.

But the company's furniture polish contains white spirit, which is a harmful VOC, and therefore forbidden... ..

Incorrect.

The product **does not contain white spirit.**

The product can actually **lower VOC's** through substitution of aerosol-based products. It

Maxima, a company with a product portfolio that totally dispels the VOC myth:

Traditional chewing gum removers typically and traditionally have needed a 100% solvent base for effective removal. The Maxima Chewing Gum remover contains **only 20% solvent** (versus 100%) yet **fully retains the required performance**, representing an exceptional improvement on environmental impact.

Maxima Trigger Furniture Polish is a product that offers exceptional performance, close to that of an aerosol. It offers speed of use, a waterproof finish and the general characteristics in use to that of an aerosol. It allows a complete reduction in VOC's. Not only is it acknowledged as the best trigger furniture polish on the market but is a prime example of a **green product without any performance loss.**

Maxima thick, acidic toilet cleaner is the only super-concentrated product of its type. It can be diluted 25 times, yet still retains its thickness with absolutely no compromise in performance. Transport and packaging have been drastically reduced for this product.

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may not be from renewable sources but **it has a vastly superior environmental profile**. There is no risk to the user because the raw material is only harmful in an irrelevant context as the product is **viscous**.

Some products are alkaline, therefore there is a risk of skin irritation... ..

This is a nonsensical statement.

Normal water has a pH (power of Hydrogen) of 7 on a scale of 1 to 14, where 1 is extremely acidic (e.g. nitric acid), and 14 is extremely alkaline, (e.g. sodium hydroxide or caustic soda).

Taking into account water has a pH of 7, the Spanish Vichy Catalan brand of bottled water would be less than pleased were it inferred that their product, with its pH of 8.3, might be viewed as a skin irritant by virtue of its inherent and natural alkalinity.

The argument “natural ingredients and sugar based” is not justified... ..

Not true.

They are used as and where appropriate.

The argument “manufactured by an ISO 14001 company” does not justify the ecological claim... ..

Perhaps so.

However, most importantly, it is only **one single factor** and is certainly relevant where that company adheres to, and can be audited on, the required demands of the standard.

There is no justification to the argument ‘minimum impact on the environment’... ..

This is most certainly a misleading fallacy (briefly covered earlier in this document). The BACS/UKCPI document “*Guidance for Responsible Public Procurement of Cleaning Products*” was commended by the UK Chemicals Stakeholder Forum as first-class in helping to focus on an improvement in the overall product supply sustainability.

There are three guiding principles that have been recognised as steering a company to produce true green/environmentally friendly cleaning products:

i. Use of the correct ingredients:-

The guidance document examines the major classes of ingredients by summarising expert scientific information published about each of them. A true green range would

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comply with all the recommendations from that listing

- ◆ *It should be noted that the Ecolabel 'Detergent Ingredient Database' list does not relate or refer to these expert and authoritative studies.*

ii. Products should be manufactured in an ecological factory

This document has already explained the environmental stance and investment in time, funding and resources needed by a true green manufacturer on this issue, including IPPC permit, good environmental management systems and large capital projects to conserve energy and/or waste.

A true green manufacturer uses large septic tanks to breakdown all remaining by-products on-site to harmless ingredients.

iii. The products should be specified and used correctly

A true green range would be based on the use of safe, high performance products. Neither chemical nor energy usage increases while using these products, and they contain much lower levels of solvents than their traditional counterparts.

Examples of correct specification and use include:

- ◆ Looking to use concentrated products - buying, for example, a 40% concentrated product rather than a 20% one and simply using half the dosage
- ◆ Diluting as accurately as possible to avoid product "glugging" which is, in essence, product overdosing
- ◆ Using a 'wash once, wash properly' regime, as all cleaning activities use energy
- ◆ Reduce mistakes and wastage by training staff appropriately.