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ARTICLE FOR FOOD PROCESSING

CLEANING CAN BE MORE SUSTAINABLE – BUT NOT TOTALLY SO

Neil Brown of leading contract cleaner Hygiene Group asks – just how sustainable can cleaning in the food industry be?

Totally sustainable, environmentally friendly cleaning in the food production industry is currently not achievable – as no matter how ‘green’ the substances used, the material removed remains a potential pollutant.

While dust from packaging, for example, is simple to remove using a brush or vacuum cleaner, the nature of soiling within food handling and production is almost invariably more complex – with various fats, proteins, firming agents, sugars and metals all needing different reactants to be broken down and removed.

Cleaning anything more than a small smear therefore usually requires a chemical - as there are still very few truly ‘green’ cleaning products.

Proteins in food will oxidise and denature, forming an ‘open matrix’ which is highly adherent to surfaces, while fats are not only very difficult to shift, but effectively ‘conceal’ other food ingredients from the detergent, reducing its effectiveness.

The established way to remove inorganic scales is with an acidic product, while fats usually require an alkaline cleaning agent; in addition to wetting and

suspending fat particles, this can produce a soap that can be rinsed and removed more easily.

For other types of matter, a surfactant is generally needed to reduce surface tension; this allows it to be wetted then suspended and dispersed by the detergent.

As an example, a facility handling raw meat generally needs to use a strongly alkaline chemical containing chlorine and a surfactant to break up protein, saponify and suspend fats, and dissolve salts and sugars present in the meat.

Chemical use, therefore, is hard to avoid in any environment handling chemically complex products - and it simply isn't realistic to reduce chemical use by using hotter water or more physical energy – i.e. manpower – due to the additional cleaning time, facility downtime and therefore cost involved.

Whatever the cleaning medium, everything removed will enter the environment, whether washed down a sink or placed into a bin. These are organic pollutants, with significant chemical and biological oxygen demands.

Reusable microfibre cloths are often suggested as a solution, but these must be washed before reuse, with debris entering the wastewater system, while a totally biodegradable microfibre cloth, with a process which allows recovery of all materials held within, has yet to be invented.

Cleaning with eco-chemicals is achievable on a small scale – but will require the use of locally produced crops to generate the components of cleaning materials, which must be produced without using chemical energy while being fully biodegradable.

Eco-chemicals can have a larger carbon footprint than conventional detergents. A 'green' detergent produced from sustainably managed biomass sounds good - but not if the raw material is flown in from overseas, and requires significant energy in local processing. And, as the laws of chemistry

are the same for everyone, to do the same job, the eco-chemical will often have the same pH as conventional materials, the same suspended solids and the same level of COD and BOD when rinsed away.

It is not much of an exaggeration to say that the most sustainable way of cleaning is not to clean at all!

Production equipment can often run for extended times without requiring cleaning – it is generally only when production stops that bacteria can build up and create a problem. Of course, introducing this to existing processes can require extensive testing and risk assessments, but there can be significant environmental and commercial benefits in cleaning only when needed. For example, a meat mincer working constantly does not require much cleaning on an ongoing basis. But as soon as production stops, a thorough clean is needed almost immediately to remove adhering meat particles before the next shift. This typically also requires an effective disinfection regime.

One solution is to review production schedules and run the facility continuously for say, three days a week, with a complete clean only required at the end of the intensive production cycle, rather than five or six shifts on separate days which mean machinery and surfaces need daily cleaning.

The need for frequent surface disinfection is also questionable. If cleaning is thorough then most microbiological contamination is removed, so if the equipment or surface is to be reused within a few hours, routine disinfection may offer no practical benefit.

The traditional view of cleaning is an 'end of shift' process to ready equipment and surfaces for the following day, but that needs to change if food handlers and producers are serious about maximising sustainability.

By simply removing the need for cleaning and disinfecting so regularly, the sustainability of cleaning operations can be maximised, while costs on both material and manpower can be simultaneously reduced.

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Notes to Editors

Hygiene has grown from modest beginnings more than 25 years ago to become the largest and leading supplier of hygiene management in the UK. It can be visited at www.hygiene.co.uk.

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