



CIEH Advisory Services

Essential Requirements for the Effective Laundering of Linen

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There is recognition, backed up by scientific evidence, that clothing and household linens can be a risk factor for transmission of infection but it is difficult to quantify the extent of the risk, which will vary dependent on settings and activities.

Within the catering and hospitality sector there is a general legislative requirement to ensure that at all stages of production, processing and distribution, food is protected against any contamination likely to render the food unfit for human consumption, injurious to health or contaminated in such a way that it would be unreasonable to expect it to be consumed in that state.

There are many detailed requirements that underpin this but of particular note in the context of laundering processes is the need to ensure that every person working in a food-handling area maintains a high degree of personal cleanliness, which includes the wearing of suitable, clean and where necessary, protective clothing.

To ensure that food is protected from risk of contamination food handler over clothing needs not only to be visibly clean but also should not "carry" infectious agents at a level that might cause illness. Effective laundering and regular changing of contaminated clothing would be expected to address the legal requirements.

There has been considerable study of the elements required to achieve an effective laundering process i.e. one that only produces visibly clean products but also reduces potentially infectious agents to an "acceptable" level.

The key stages of an effective laundering process are:

- **Physical removal**

This occurs in the main wash, where soil and micro-organisms are detached from the fabric and suspended in wash water. A substantial proportion of contaminating micro-organisms can be eliminated during the rinse and spin cycles.

- **Thermal inactivation**

Micro-organisms can be killed by heat and in general, the higher the temperature the greater the rate of microbial inactivation.

- **Chemical inactivation**

Chemicals can kill micro-organisms. The use of Activated Oxygen Bleach (AOB) or hypochlorite bleach has been shown to greatly increase the inactivation of many micro-organisms.

London Linen Supply has systems in place to monitor and manage these processes strictly to ensure optimum outcomes e.g. monitoring of temperatures achieved at various stages and testing standards achieved such as chlorine levels, critical for effective microbial inactivation.

There is widespread recognition that home laundering can struggle to achieve consistent standards due to wide variations in the design, performance and use of domestic equipment.

Detailed examination of evidence on laundering practices and the range of challenges within the home has led the International Scientific Forum on Home Hygiene ¹ to identify the key components required for effective domestic laundering to be as follows:

- **Segregation according to contamination risks i.e. into higher and lower risk categories.**

Materials to be categorised as higher risk would include work wear and associated materials that are likely to have come into contact with pathogens e.g. chefs clothing, cleaning cloths etc.

Higher risk materials should be laundered as follows:

- **At 60°C and above, with a guarantee that the water will reach 60°C before the start of the wash cycle.**
- **Using a standard wash cycle i.e. not a "Quick wash" or an "Eco wash"**
- **The wash should include at least 2 and preferably 3 rinse and spin cycles**
- **A detergent containing an appropriate microbial inactivation agent e.g. AOB, at an appropriate dilution, should be used**
- **Over loading of the washing machine must not occur**
- **Washed laundry should be tumble dried at 40°C for at least 20 minutes**

¹ Bloomfield SF, Exner M, Signorelli C, Scott EA. Effectiveness of laundering processes used in domestic (home) settings (2013) International Scientific Forum on Home Hygiene.
<http://www.ifh-homehygiene.org/review/effectiveness-laundering-processes-used-domestic-home-settings-2013>

- **Laundry should be steam ironed**

Beyond the laundering process there should also be mechanisms in place to ensure that materials are properly dried and protected from further contamination before use.

Laundering equipment must also be regularly checked and maintained to ensure it reaches required standards e.g. specified wash temperatures. N.B. There is good evidence that many domestic machines don't reach temperature. In addition high levels of machinery cleanliness need to be ensured to prevent equipment itself becoming a source of contamination.

If all these elements cannot consistently be ensured then an effective laundering process, with the required level of microbial inactivation is unlikely to be achieved.

For lower risk materials, the same principles should be applied but a lower laundering temperature e.g. 30 to 40 °C may prove acceptable.

Report Author

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