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Hygienic design of food processing lines to mitigate the risk of bacterial food contamination with respect to environmental concerns

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ABSTRACT

Public authorities, chain stakeholders and consumers are all concerned by microbial food safety. Microbiological hazards are one of the most common causes of food poisoning that has been considered for many years but still on the track nowadays considering the recent foodborne disease outbreaks largely reported by the media. Microbial contamination origins are diverse from the field to the plate e.g. soil, air, equipment surfaces, packaging material and staff.

Firstly, this article highlights the ways in which the choice of materials plays a major role in surface hygiene. Hydrodynamic conditions directly linked to the equipment geometry are focused on, as is the role played by surfaces in contact with air in surface drying. Surface environmental conditions during processing or cleaning are discussed and new proposals described. Better knowledge of surface contamination and cleaning mechanisms would positively impact hygienic design principles, thereby mitigating any environmental impact of the cleaning operations in the food and beverage industries: new strategies are therefore proposed.

Industrial relevance:

Hygienic design of food processing equipment is nowadays considered to be mandatory in the reduction of the risk microbial food contamination. The presentation of potential roles of materials on the remaining bacterial soil, after soiling and cleaning, provide new insights when envisaging any hygienic improvements. Equipment design plays a major role in