

SURFACE TOPOGRAPHY AND ORGANIC SOIL: FACTORS AFFECTING THE HYGIENIC STATUS OF OPEN FOOD CONTACT SURFACES

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ABSTRACT

PathogenCombat (www.pathogencombat.com) is an integrated FP6 EU project, active from 2005-2010. The project addresses all aspects of food safety, thanks to its 40+ partners. Manchester Metropolitan University is one of the 7 partners involved in Work Package 11, Hygienic Food Processing Systems, and we focused particularly on aspects affecting the hygienic status of open food contact surfaces, alongside 3 other partners. This presentation summarises our key findings.

The wear of a hygienic surface can alter its topography, and reduce cleanability. Using a simple impression technique, in-use surfaces were sampled, and typical linear features (*i.e.* scratches) were identified. In the laboratory, surfaces presenting features of 0.5 and 1 μm width were fabricated and coated with titanium, to provide a defined chemistry and topography.

These surface retained microbial cells, both in terms of number of cells, and the strength of attachment - particularly if the features were of the same dimension as the cells. The features also retained organic soil, which in turn reduced cleanability and hygienic status of the surface. In order to separately assess the behaviour of cells and soil on surfaces, a differential fluorescent staining method was developed, which, coupled with image analysis, enabled separate assessment of the coverage of surfaces by soil and cells, and hence evaluation of relative removal of the two components during cleaning and disinfection.

This work has enabled the *in vitro* modelling of challenging situations for open surface hygiene, and provided research data to underpin practical maintenance of good hygiene in food processing plants. Findings are being disseminated to SMEs and other appropriate audiences as the final part of the PathogenCombat remit.