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METHODS FOR CONTROLLING THE CLEANABILITY OF FERMENTATION TANKS

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ABSTRACT

Maintaining the hygienic state of tanks is a big issue in the food industry. One focus point is that taking samples in tanks in many ways are problematic. Take alone the size of tanks, they can be as big as 600 m³ and there is not necessarily manhole in the tank allowing visual inspection. However, manholes are not necessarily advantageous for a hygienic point of view since our studies show that this is the most difficult area of the tank to clean. Tanks are cleaned using CIP which may leave shadow areas in parts of the tank unclean. Traditional sampling for microbiological evaluations has the limitations that only a limited area of the tank surfaces can be evaluated. Quite often it is impossible to reach the proper problem areas i.e. with sensors from the manhole with the sampling tool. One practical way of finding the hot spots is to soil the surface with an indicator before cleaning and observe residues after cleaning. This study compares various traditional and improved sampling methods. A good method is practical to use even for large tanks, the method should give informative data and the sampling should not cause any harm to the tank or the processed product. The methods tested for controlling the cleanability of fermentation tanks included conventional cultivation of swabbed and wiped surface samples, sampling with contact agars, testing ATP from swabbed surface samples, microbial and chemical residues of rinsing water, visual observation with UV-light and simulating cleaning procedure in virtual tank model using computational fluid dynamics.