

APPLICATION OF CAPILLARY ELECTROPHORESIS FOR ORGANOARSENICALS IN WATER BODIES NEAR POULTRY FARMS

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ABSTRACT

One way in which arsenic is introduced into the environment is through organoarsenicals. Organoarsenicals are used as feed additives in animal feeding operations. In poultry birds, they prevent diseases and accelerate growth. Examples of these organoarsenicals are roxarsone, arsinilic acid, nitarsone and carbasone. With poultry, consumption of organoarsenicals pose no health threat as 95% are excreted unchanged but the degradation products - arsenics, are toxic when accumulated in the human body system and can cause acute poisoning and cancer. This also leads to arsenic contamination in the environment - groundwater, air and consumer products have endangered the health and safety of millions of people around the world. Over the years, several analytical methods have been employed to determine the presence and concentration of organoarsenicals, however, they have some major drawbacks such as difficulty in measuring low concentrations and low selectivity. A capillary electrophoresis method using ultraviolet detection developed to determine the presence and concentrations of organoarsenicals in water bodies across British Columbia.

The effects of pH and concentration of buffer, type and additive on the separation are being investigated in order to determine the optimum condition that would enable the detection of low concentrations of the organoarsenicals in environmental water bodies.