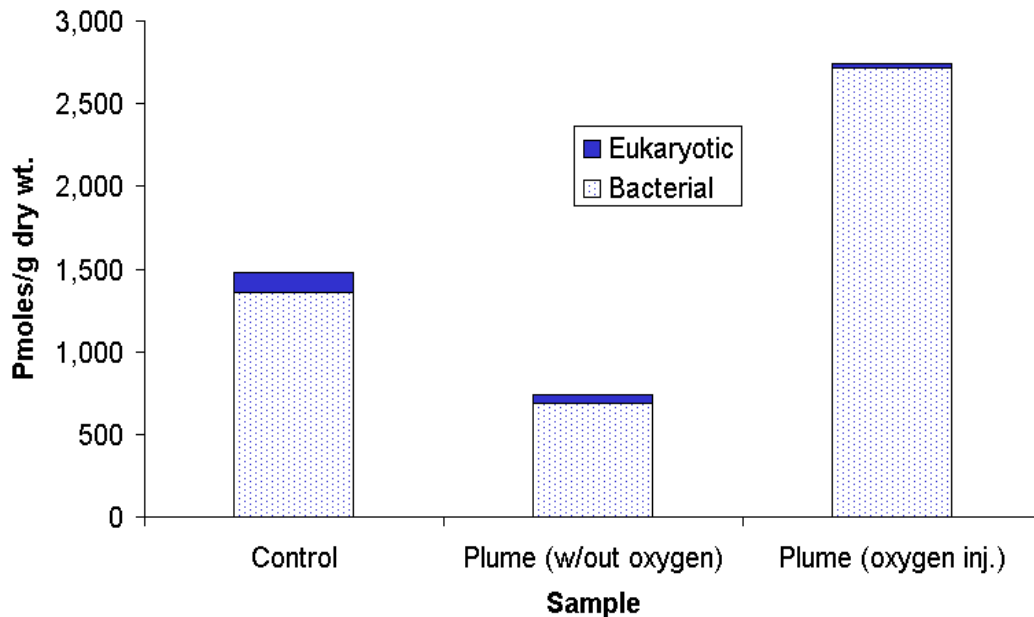


## Oxygen & Microbial Biomass Content

The total viable microbial biomass can be determined by the amount of phospholipid ester-linked fatty acids (PLFA) detected in a sample. Viable microbes have an intact membrane that contains phospholipids. Cellular enzymes hydrolyze and release the phosphate group from the fatty acids within minutes to hours of cell death; therefore analysis of PLFA provides a measure of cells with intact membranes.

A careful study of subsurface sediment reveals viable biomass determined by PLFA was equivalent (but with a much smaller standard deviation) to estimates by intercellular ATP, cell wall muramic acid, and very carefully conducted acridine orange direct counts.

For example, the figure below displays biomass results from three samples from a contaminated site. The control sample was located outside the area of contamination. The other two samples were located inside the contamination zone (plume), with one sample receiving oxygen. The client was interested determining if additional oxygen was stimulating the bacterial population. **As shown, biomass content determined by PLFA was 4 times higher in the plume sample receiving oxygen than in the unamended plume sample.**



Source: [www.microbe.com](http://www.microbe.com)