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An optimised method to concentrate living (Rose Bengal-stained) benthic foraminifera from sandy sediments by high density liquids

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## Abstract

In recent years, living (Rose Bengal-stained) benthic foraminifera are increasingly used in biomonitoring studies, with the international expert group FOBIMO proposing the development of standardised methods. Until now, it has been considered inadvisable to concentrate foraminifera by density separation, because this may bias the composition of the foraminiferal fauna, and does not offer sufficient quantitative guarantees. However, biomonitoring studies often concern coastal areas with sandy sediments where living foraminifera are diluted by large amounts of sediment grains. Hence, long picking times are a serious economical setback, strongly limiting the use of foraminifera in environmental quality assessment. We aimed to select, on the basis of quantitative criteria, the best available density separation method, capable of strongly concentrating living foraminifera without a significant change in the faunal composition. We selected three test samples, from the French Mediterranean coast, with different sediment particle types and foraminiferal faunas (with a high contribution of agglutinated taxa, not well separated in earlier studies). We tested three high density solutions: trichloroethylene (TCE), zinc chloride (ZC), and sodium polytungstate (SPT). Although TCE is a highly toxic organic compound, it was commonly used in the past. We compared its efficiency with that of two salts (ZC and SPT), dissolved in water, so that their density can be easily adjusted. We tested SPT with a range of density values (i.e., 1.7, 2.1, 2.3, and 2.5). The deposited and

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