

VI Congreso Argentino de la Sociedad de Toxicología y Química Ambiental



*“Compromiso entre academia,
industria y gobierno
por un ambiente mejor”*

LIBRO DE RESÚMENES

Córdoba, Octubre 2016

SESIÓN DE PÓSTERS

Dinámica y Monitoreo de Contaminantes Ambientales

P23. Assessing water quality changes caused by dredging operations in Santos estuary, São Paulo, Brazil

Consulim, C.¹, Bosa, P.¹, Zanin, G.¹, Pareschi, D.C.¹, Nogueira Junior, L.A.², Gaspar Filho, M.B.², Jovito, M.²,
Masutti, M.B.¹, Gonçalves, C.¹, Silvério, P.F.¹

¹CPEA-Consultoria, Planejamento e Estudos Ambientais Ltda.. ²CODESP – Companhia Docas do Estado de São Paulo.

mariana.masutti@cpeanet.com

Dredging activity may cause sediment resuspension altering body water quality in the vicinity of dredge operation. In this work ten sampling campaigns were performed (2010 through 2012) in four areas of Santos harbor's navigation channel, with different grain sizes, in order to monitor along one hour, the variation of physical and chemical parameters in sediment plume formed due to dredging activity. The parameters analyzed included: dibenzo(a,h)anthracene, chlorophyll feopigments, total organic carbon, biochemical oxygen demand (BOD), nitrogen (ammonia, nitrate, nitrite and Kjeldahl nitrogen), total and dissolved phosphorus, total suspended solids, turbidity, arsenic and mercury. In addition, pH, dissolved oxygen, conductivity, salinity, redox potential and temperature were measured in the field. A previous campaign was carried out before dredging activities.

Parameters selection was based on the previous characterization of sediments and in the case of BOD, chlorophyll and its degradation products, such as feofitin, these were monitored aiming to observe any changes in water quality which could result in changes in habitat or behavior of aquatic organisms in case of releasing of nutrients in function of the dredging was observed; however, results were mainly below quantitation limit of the analytical method, with isolated occurrences, where the concentrations decreased significantly (below quantitation limit) within 60 minutes after beginning of overflow or passage of the dredger.

In general, the results suggest that sediments dredging in the investigated region did not produce significant changes in physical and chemical characteristics of water column in the dredged area, since all observed changes were temporary and were consistent with values obtained in the study area before dredging activities. The found values and the observed temporary effects are similar to those obtained in other studies (Palermo and Thackston, 1988; National Research Council - NRC, 2000). As field studies carried out by Essink (1999) in areas of oceanic disposal, the present study showed that dredging causes local and temporary increase in suspended sediment in the water body and consequently turbidity increase; on the other hand, the natural variation in turbidity induced by high tides and climate changes has more significant effects than those caused by sediment dredging activities.

Keywords: dredging, sediment resuspension, contaminant mobilization, body water quality alteration.