

# Baseline Determination in Marine Environmental Carrying Capacity

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Study of Marine Environmental Carrying Capacity (MECC) is a key issue in coastal management, especially in semi-enclosed bays, because of policy need to maintain and improve environmental quality and environmental control of the amount of pollutants discharged into these environments. However, the baseline determination in MECC is still confusing, and mentioned a few.

Determination of the baseline of marine environments is the principal focus of MECC's related studies. It determines the magnitude of MECC, surplus environmental capacity (SEC). Currently, however, there are no uniform methods to determine those baselines; thus, the MECC remains difficult to assess. Methods using the concentrations out of a bay, the average concentrations and highest concentrations of marine environmental monitoring data in a given bay as the baseline for MECC can all be scientifically unreasonable. As an example, the highest concentrations of marine environmental monitoring data, in a given bay, may match the results of currently marine environmental quality assessment (MEQA) method to be used intensively. However, because of random chance, incorrect time series analysis of the data, limited sampling even though it may be random, and many other factors affecting marine monitoring may not represent the actual environmental status of a bay. Coupled to vague definitions of carrying capacity, this will cause SEC to be lower than real MECC, and reduce the SEC of a bay. Currently, most studies of MECC use average concentrations, and some studies just use the concentration out of a bay, as the baseline of MECC. These do not match the results of current MEQA method in the sense that, in some situations, some bays would show that their environmental status has exceeded the national standards, and yet they still are consistent with SEC. This situation would



be very dangerous for policy-making and for specific strategies designed to minimize total pollution control.

The ambiguity and lack of uniformity of methods and data for the Baseline of MECC makes the results of MECC not match the results of MEQA, or do not provide sufficiently and accurate scientific results for the allocation of MECC-based policies and standards or guidelines.

After comparing on the approaches, methods and criteria in MEQA in UK, Hong Kong, China and USA, and case studies of MECC in China, lead to the conclusion that it is scientifically reasonable to make an approximately 90% accurate observations – namely, a qualitative and quantitatively sound assessment of the relevance of marine environmental monitoring in a bay between the results of MEQA and the baseline developed through MECC.