

Cellular and subcellular measures of exposure (biomarkers) and effects (bioindicators) continue to be developed. However, application of biomarkers in assessing ecological risk remains infrequent and of questionable utility. The primary challenges in using biomarkers/bioindicators to assess risk include the difficulties in (1) developing stressor-specific, quantitative dose-response functions and (2) projecting higher-order ecological effects from cellular or subcellular bioindicators.