

Deriving Sediment PRGs from PCB Congener-Specific Risk Assessment—How to Function in an Embarrassment of Riches. James Chapman, Ph.D., Ecologist, EPA/Region 5

PCB congener-specific risk assessments have some advantages over Aroclor-based risk assessments in that the former approach avoids uncertainties regarding the actual composition of Aroclors identified in the environment and biota and the implications for toxicity. However, congener-specific analyses generate much more data compared to Aroclor analyses, and, consequently, congener-specific risk assessments require much greater data manipulations and generate more results than Aroclor assessments. One of the issues that needs to be considered when planning a congener-specific risk assessment is the approach for calculating preliminary remedial goals (PRGs). As many as 12 individual PCB congeners may contribute to the overall toxicity and risk for human or ecological receptors related to aryl hydrocarbon receptor (AhR) mediated effects. If a congener-specific risk assessment shows unacceptable risk, the following choices are available for calculating PRGs: 1) calculate PRGs separately for each of the congeners contributing to the overall risk, 2) calculate PRGs for a subset of the congeners contributing to the overall risk, or 3) calculate PRGs for a single indicator congener (in all the choices, the congener-specific PRGs are converted to total PCB PRGs based on the site-specific sediment congener:total PCB ratios). The advantages and limitations of the various approaches are discussed based on experience with congener-specific ecological risk assessments in USEPA Region 5.