

**University of California, Irvine
Statistics Seminar**

***The use, misuse, and better use of exposure biomarkers
in epidemiology***

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4-5 PM

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(Bldg #314 on campus map)

Exposure biomarkers such as blood mercury concentrations are often used directly as predictors of health outcomes in epidemiologic models. However, widely accepted biological theories imply that these biomarkers should rarely, if ever, be viewed as "gold standards" for exposure assignment. Exposures are perhaps better viewed as unknown parameters or latent variables that can be estimated using biomarkers. Further consideration of biological processes suggests explicit mathematical structures for incorporating multiple biomarker measurements, exposure-related questionnaire data, and intermittent exposure events in this framework, rather than relying on more typical and crude assumptions regarding measurement error. Applications include a recent epidemiologic study of pregnancy outcomes in a population with high exposures to perfluorooctanoate.