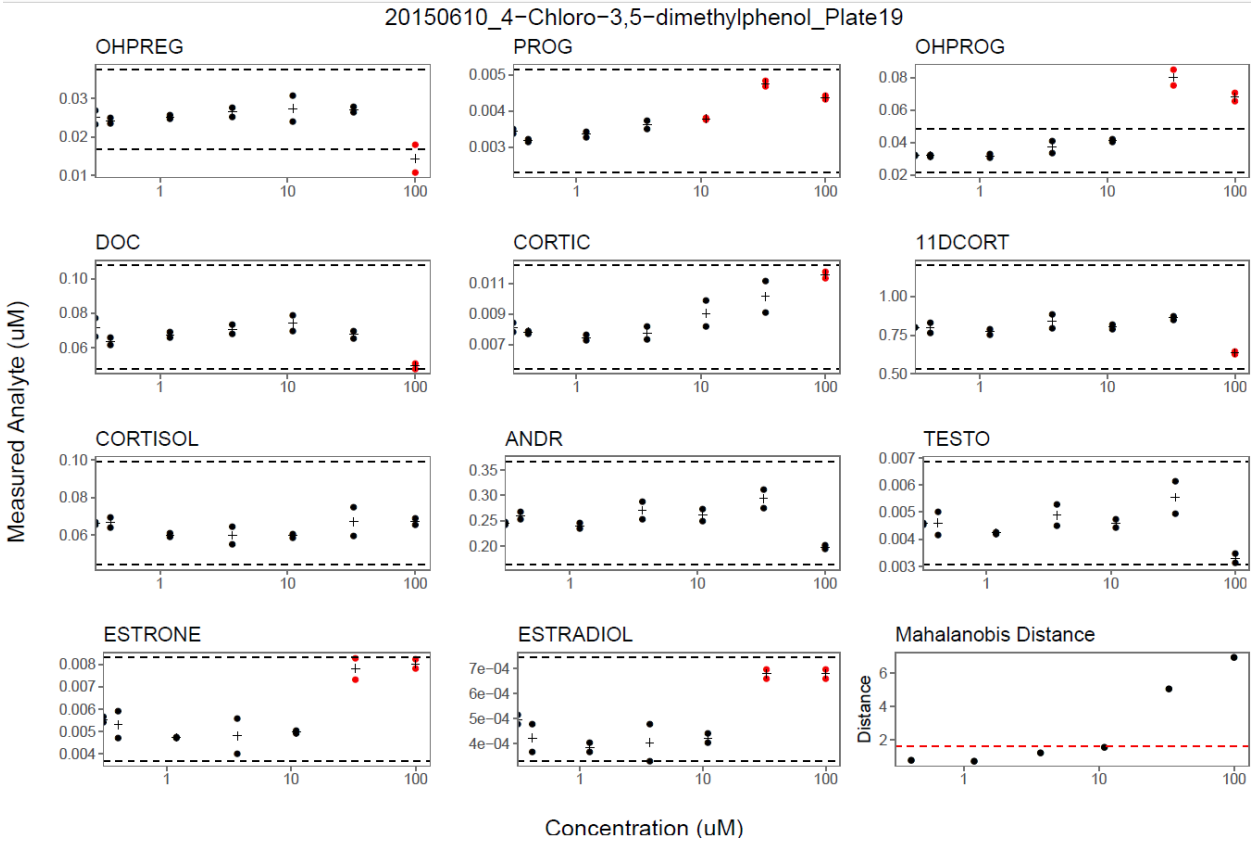
Comments on Cal Biomonitoring Nov 16 2026 agenda from Ruthann Rudel, Silent Spring Institute

A couple notes that may be of interest.

PAHs – Excellent idea to expand PAH biomonitoring so it can be more informative about cancer risk and exposure sources. A focus on nitro-PAHs will be helpful to isolate diesel emissions influences and these tend to be especially carcinogenic, especially for breast cancer (Rudel, Ackerman et al. 2014). However, it may be challenging to develop adequately sensitive methods. Adding methyl-naphthalenes and expanded focus on naphthalene compounds is important to better identify sources, since naphthalene levels in indoor air and in humans in the US is increasing (shown in Cal biomonitoring work, also (Knox, Dodson et al. 2023).

Chloroxylenol – in addition to the toxicity effects noted, this compound is on the Silent Spring list of chemicals that may increase breast cancer (Kay, Brody et al. 2024). It has borderline positive ability to increase both estradiol and progesterone levels in the H295R in vitro bioassay and also weak positive ability to activate the estrogen receptor directly.

Here's the H295R data from the supplemental file 8 of (Haggard, Setzer et al. 2019):



*Haggard, D. E., R. W. Setzer, R. S. Judson and K. Paul Friedman (2019). "Development of a prioritization method for chemical-mediated effects on steroidogenesis using an integrated statistical analysis of high-throughput H295R data." Regul Toxicol Pharmacol **109**: 104510.*

*Kay, J. E., J. G. Brody, M. Schwarzman and R. A. Rudel (2024). "Application of the Key Characteristics Framework to Identify Potential Breast Carcinogens Using Publicly Available in Vivo, in Vitro, and in Silico Data." Environ Health Perspect **132**(1): 17002.*

*Knox, K. E., R. E. Dodson, R. A. Rudel, C. Polsky and M. R. Schwarzman (2023). "Identifying Toxic Consumer Products: A Novel Data Set Reveals Air Emissions of Potent Carcinogens, Reproductive Toxicants, and Developmental Toxicants." Environ Sci Technol **57**(19): 7454-7465.*

*Rudel, R. A., J. M. Ackerman, K. R. Attfield and J. G. Brody (2014). "New exposure biomarkers as tools for breast cancer epidemiology, biomonitoring, and prevention: a systematic approach based on animal evidence." Environ Health Perspect **122**(9): 881-895.*

Thanks for your important work,
Ruthann