



**South Coast  
AQMD**

# **M313 Exclusion Pathways**

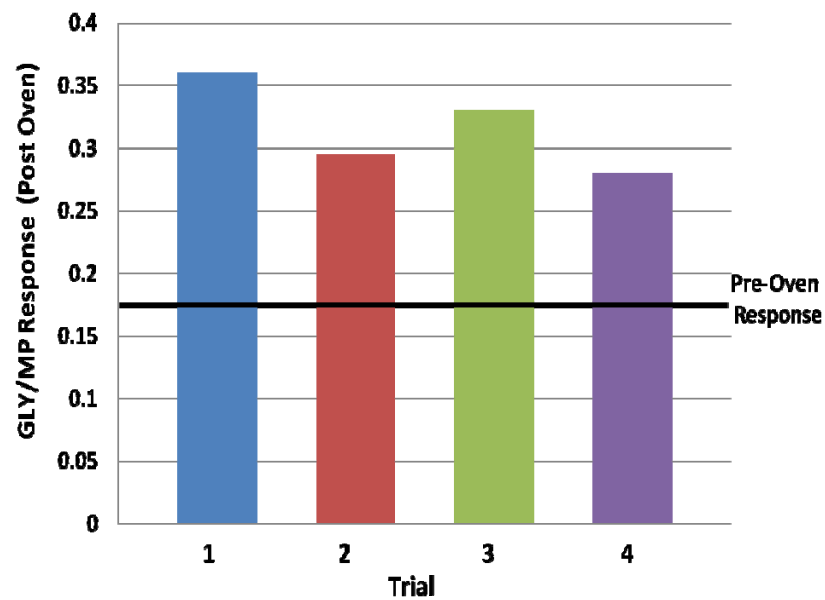
# Method 24 (50:50)

- EPA-preferred approach
- Purpose
  - Establish paradigm for the evaluation of potential M313 excluded compounds
- Procedure
  - Create a 50:50 mix of study compound with reference compound, establish GC FID relative areas
  - Subject to M24 heating
  - Measure %NV and determine relative recoveries of each component via GC-FID

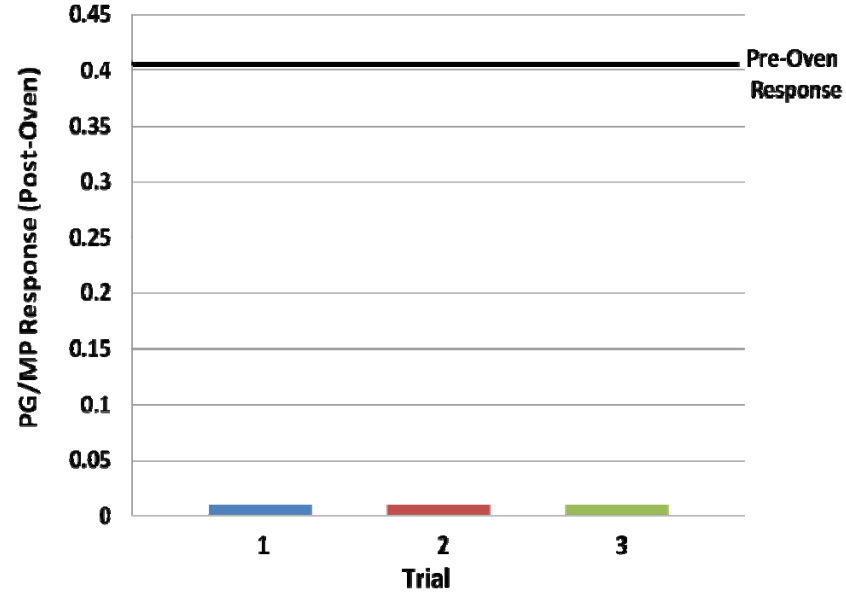
# M24 (50:50) Procedure A

- Methyl palmitate (MP) reference
- Study compounds: Glycerol (GLY), Propylene Glycol (PG), Pentaethylene Glycol (PEG)
- Add reference plus study compound, each neat, to pan

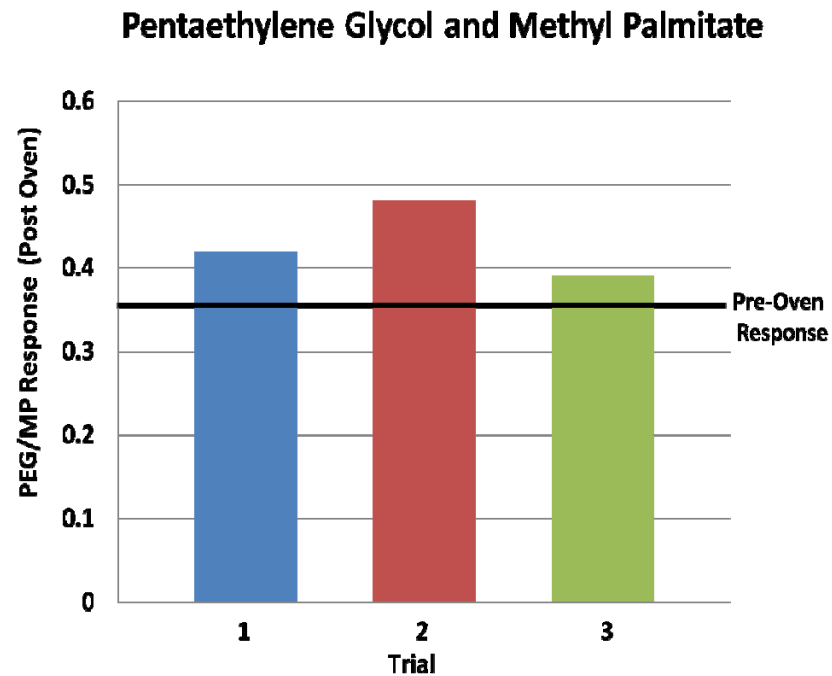
# Procedure A, GC FID Relative Areas GLY:MP



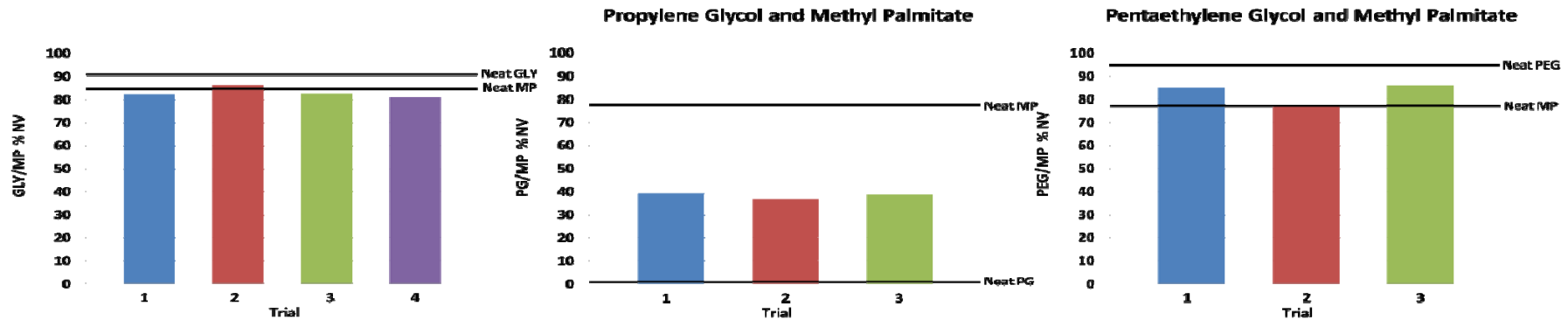
# Procedure A GC FID Relative Areas PG:MP



# Procedure A, GC FID Relative Peak Areas PEG:MP



# Procedure A Difficulties



MP and test compounds not miscible  
Variable GC FID area ratios  
Variable %NVs (above)

# Procedure A Observations

- Mixing MP with another compound of interest (GLY/PG/PEG) neat leads to significant variability in %NV results by M24.
- Preliminary **qualitative** results show

<u>More volatile than MP</u> qualifies as VOC	<u>Less volatile than MP</u> potential excluded compound
Propylene Glycol	Glycerol
	Pentaethylene Glycol



# M24 (50:50) Procedure B

- Dibutyl phthalate (DBP) reference
- Study compounds: Glycerol (GLY), Propylene Glycol (PG), Pentaethylene Glycol (PEG)
- Dissolve reference and study compound, add to pan, heat per M24
- Work in progress

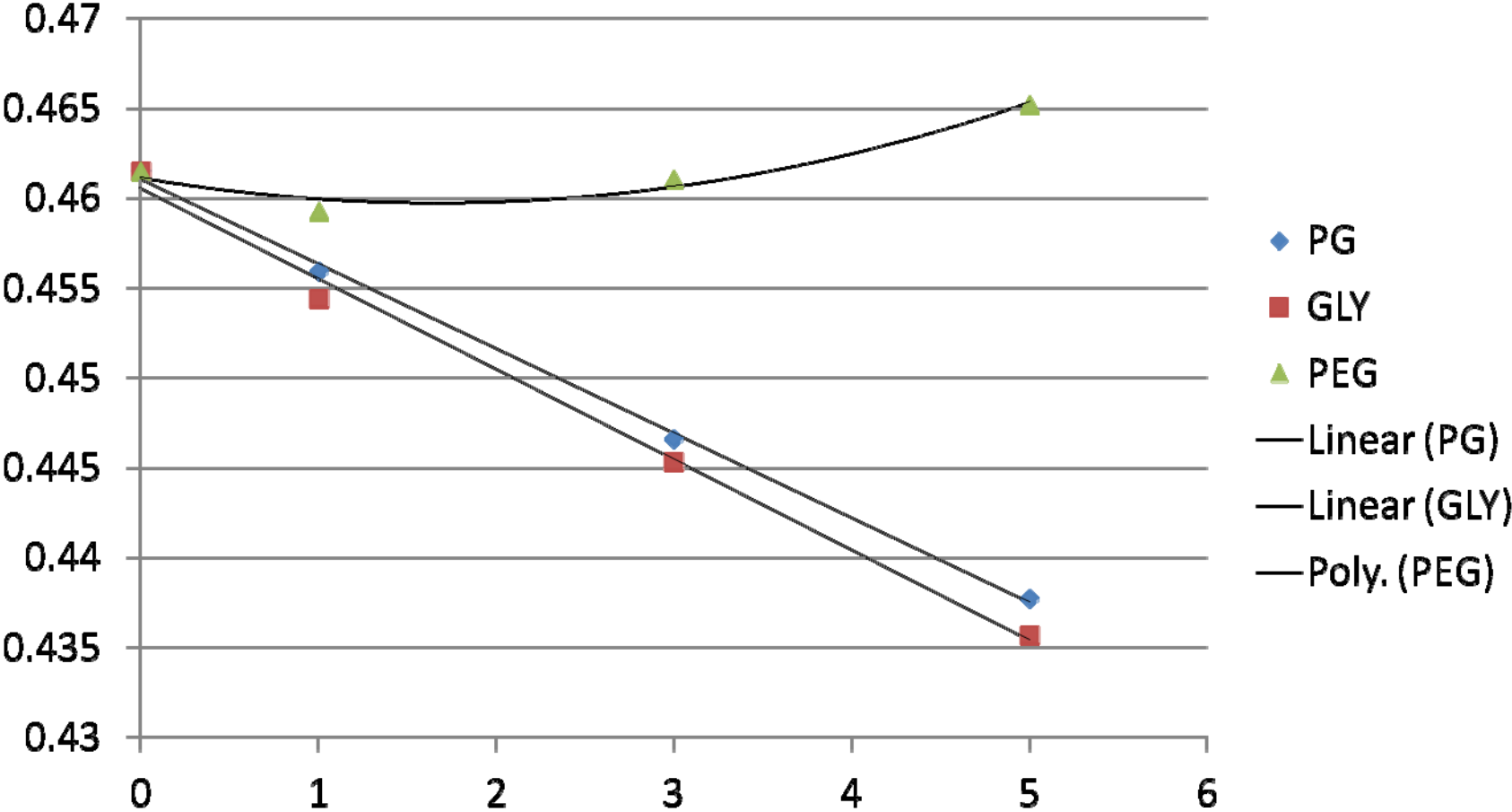
# Film Spiking and Evaporation Preliminary Work

- Spike coating with 1%, 3%, and 5% reference compound
- Spike coating with 1%, 3%, and 5% test compound
- Heat for 1 hour per M24
- Measure %NV and graph for comparison

# Film Spiking- Coating 1, Near-Zero VOC

- Fully formulated commercially-available flat black interior latex
- Near-zero (approx 2) g/L material
- Spiked with PG, PEG, and GLY
- Spiking with MP difficult

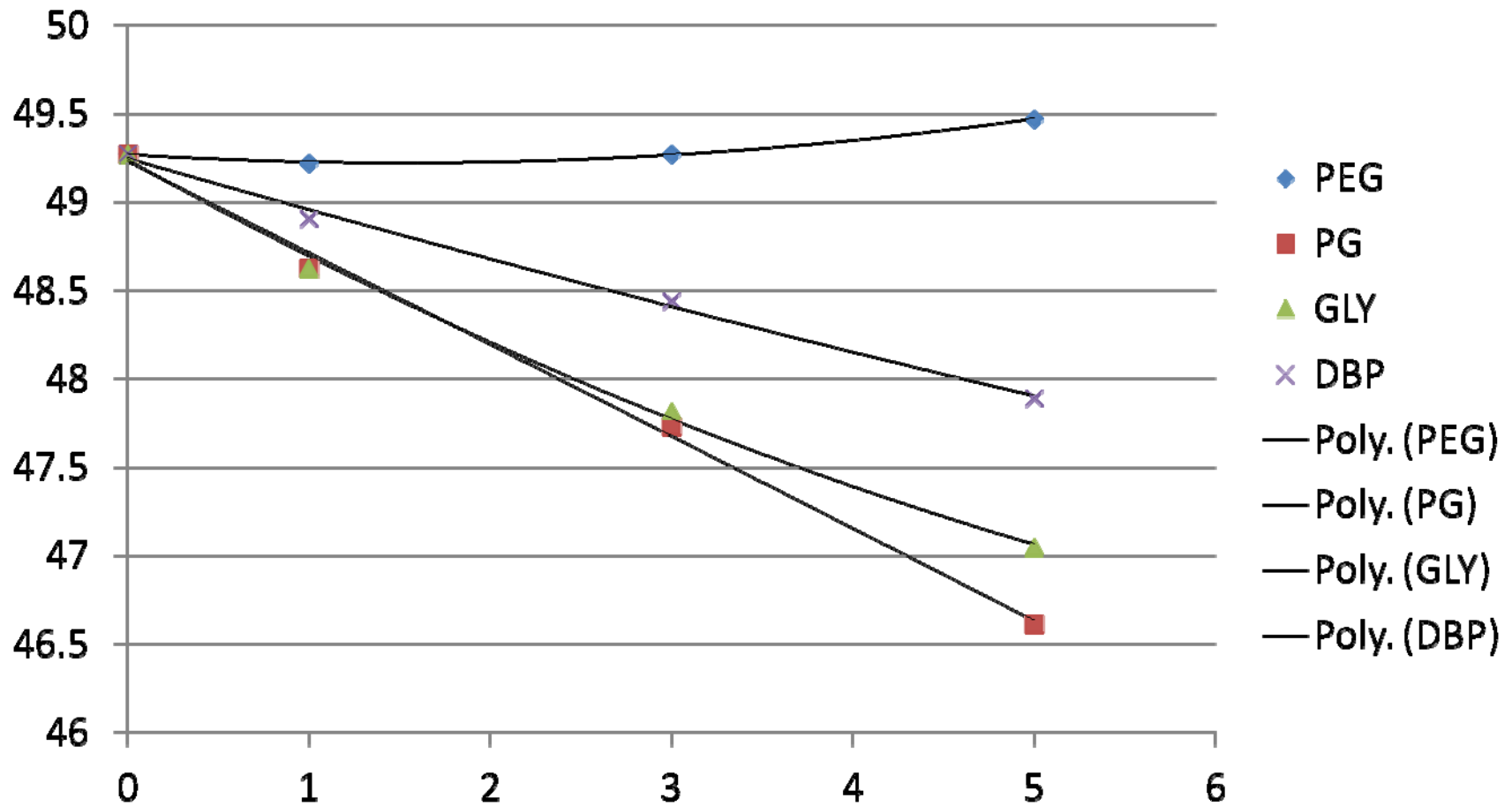
# Film Spiking- Coating 1, Near-Zero VOC



# Film Spiking- Coating 2, Low VOC

- Fully-formulated white semi-gloss exterior paint + primer
- Low VOC approx 30 g/L material
- Spiked with PG, PEG, GLY
- Spiking with MP difficult, DPB substituted

# Film Spiking- Coating 2, Low VOC



# Film Spiking

- Additional work on resin-only matrix using DBP reference
- Method write-up
- Questions?