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VirginiaTech
Invent the Future

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Rapid methods to estimate exposure to SVOCs in indoor environments

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EPA project research objectives

1. Develop novel methods to measure model parameters (C_0 and y_0) for representative sources that emit different SVOCs;
2. Develop novel methods to determine surface/air partition coefficients (K_s) for interior surfaces including airborne particles (K_p), dust (K_{dust}) and skin (K_{skin}) and develop correlations;
3. Conduct single-source **chamber tests** and validate the single-source model; and
4. Evaluate **assumptions** of rapid single-source and single-phase methods and characterize the uncertainty inherent in model predictions.

Possible Collaboration

- A few common products
- A few common SVOCs
- Xudong's microGC – validate using our chambers
- Much stronger focus on products
- Product categories
  - Additive
  - Sprayed and applied
  - Others?

Possible Collaboration

- Exposure pathways
  - Inhalation of gas-phase
  - Inhalation of airborne particles
  - Ingestion of dust
  - Dermal absorption from gas-phase
  - Others?
- Idea to include measurements of mass-transfer coefficients
- Modeling of human behavior and integration with exposure models
  - Agent-based models and use of “big data”
- Common computational framework for integrating systems
- Closer collaboration with industry
  - Use of diffusion tube to measure y0 as production line test
  - Guidance on chemical substitution