



# What is Representative?

By Karna Holquist and Amy Salamone

January 7, 2026

# Table of Contents

- 1** Introduction
- 2** Representing the Product
- 3** Representing the Market
- 4** Questions and Conclusion

# Intro to Representative: Within the Product and Within the Market

- When we're doing studies, we want to get the most representative sample. But what does that mean?
  - Most products are too big for the lab to use as purchased.
    - The sample can represent a piece of the product.
  - There are millions to billions of products for sale in the US.
    - The product can represent what is available to consumers at stores or online.

# Representing the Product

- Ecology uses several methods to ensure our samples are representative and meet study objectives
  - Quality assurance process – make a project plan.
  - Componentizing – what's in the law? where is the chemical likely to be?
  - Size reduction – what tests are we doing?
- Ecology SOP PTP-001 and PTP-002 discuss components, but exact definition of what a component is depends on the study.

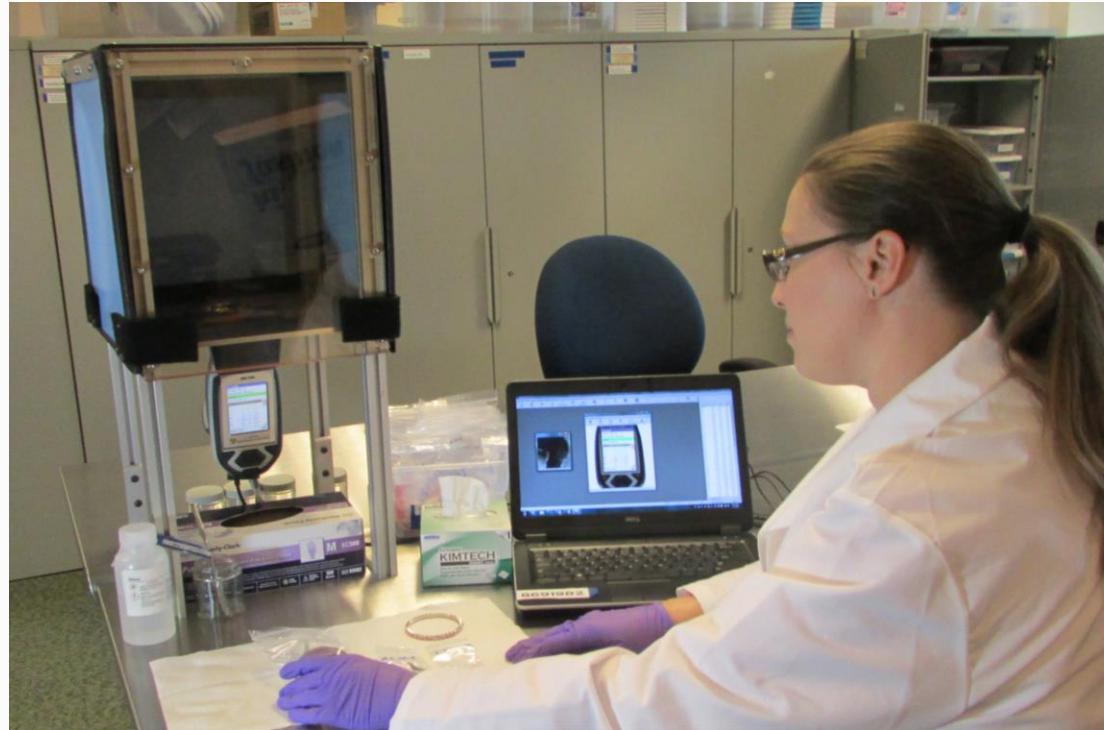
# Components & Compositing

- One product can have many components
- Composite samples – are components too small?



# Screening Questions

- Screening can help identify high risk components, but can introduce bias to sample selection



# Representing the Industry

- Ecology has a statistician that can answer questions about sample numbers needed for representativeness.

$$n = \frac{1}{\frac{\varepsilon_{rel}^2}{Z_{1-\alpha/2}^2 CV(y)^2} + \frac{1}{N}}$$

- The number is too large to be practical for most consumer studies.

# Change in industry

- New products come onto the market all the time, old products get discontinued.
- Can only be a snapshot in time.
- Because of these and similar challenges PSU doesn't make claims about segments of the market.

# Questions and discussion

- Do other states use any statistical tests for representative samples? What do you use?
- What does your lab request in terms of sample submission? What parts do they test and how do they report that?



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

# Thank you