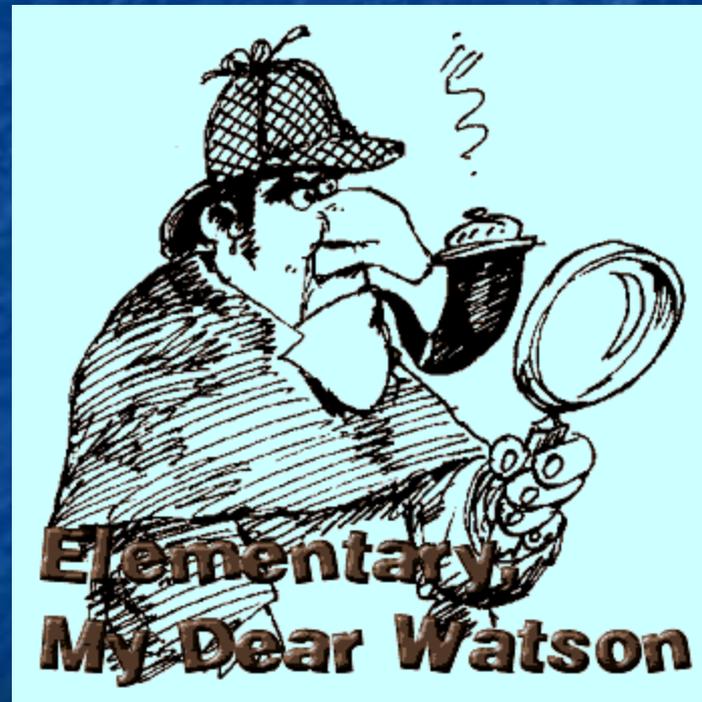


US EPA ARCHIVE DOCUMENT

Data of Known Quality

What is it?
How do I get it?
Why do I need it?

What are Data of Known Quality?



What are Data of Known Quality?

The generation of data of known quality requires that certain checks be in place so that possible errors, or biases, in the results can be identified and corrected.

EXAMPLE

Known Concentration

1 liter sample spiked with 50 ug Benzene

Concentration = 50 ug/L

Analysis results = 48 ug/L

%R = 96%

EXAMPLE

Unknown Concentration

What is the
concentration? ???

Analysis results = 73 ug/L

%R = ???

How do I know what the quality of my data are?



How do I know what the quality of my data are?

- Field QC
 - Blanks – field, equipment, trip
 - Duplicates, co-located, replicates
 - Split samples
- Laboratory QC
 - Surrogates
 - Matrix Spikes
 - Blanks

Surrogate Spikes

- Known amounts of organic compounds, similar in behavior to target analytes, are added to samples before processing.
- Example: add 50 ug/L to each sample
- Surrogate acceptance range: 80-120%R

EXAMPLE #1

Data of Known Quality

Analytical result unk. compound = 73 ug/L

Surrogate %R = 84%

Is it likely that the sample result is accurate?

EXAMPLE #2

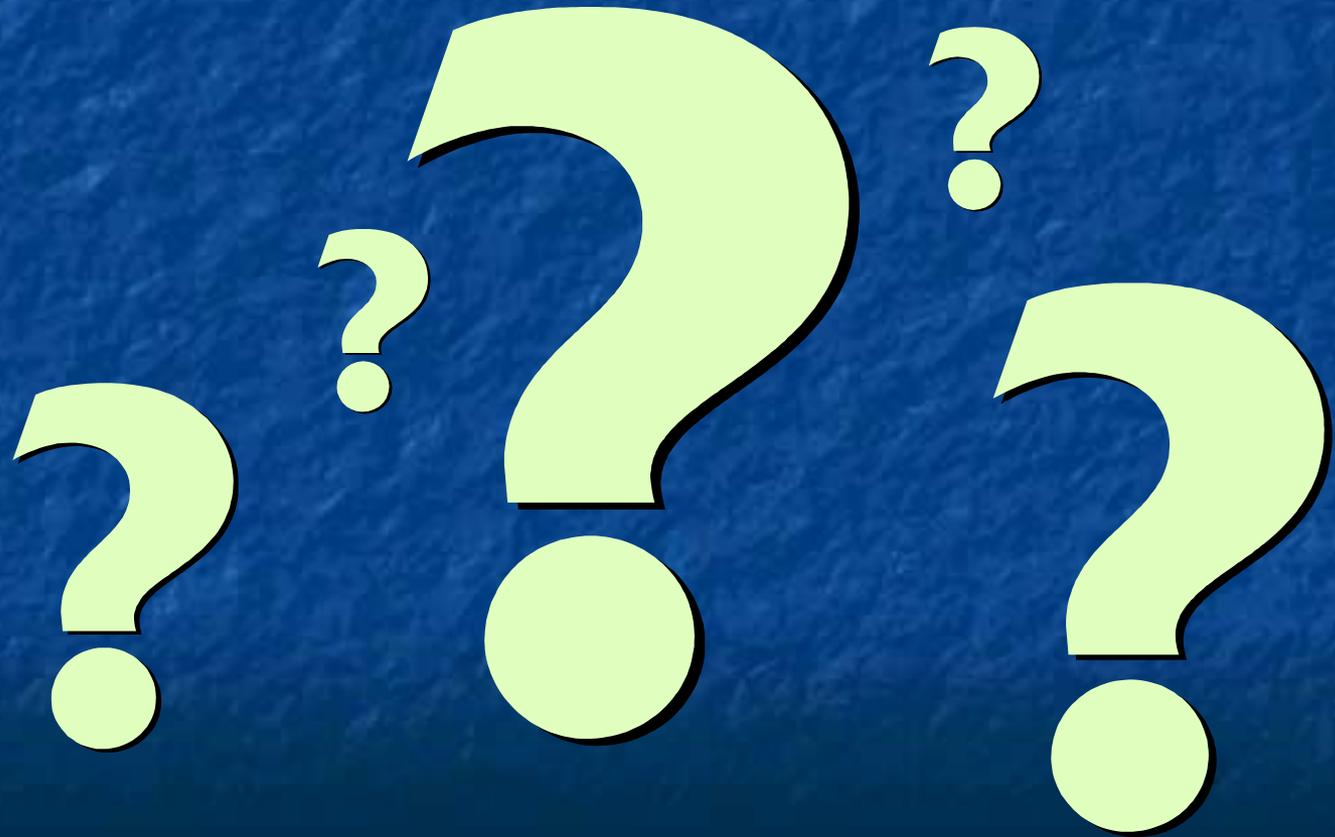
Data of Known Quality

Analytical result unk. compound = 36 ug/L

Surrogate %R = 50%

Is it likely that the sample result is accurate?

Questions to Ask



Questions to Ask

- Are the identifications and numerical results correct?
- Are there sufficient, documented results to determine accuracy and precision?
- Was laboratory performance acceptable?
- Are there any significant technical, documentation, or other problems which may invalidate the results?

Why is data of known quality important?

- Gives confidence that the analytical results accurately reflect the concentration of contaminants in the samples
- Helps identify uncertainties in the information used to make the decisions
- Provides traceability, transparency, and accountability