

Inside the Magic

- Sample Collection and Sample Preparation -

Steven Perez
ADPEN Laboratories, Inc.

NAICC 2014
New Orleans, LA
January 31, 2014



The (Sample's) Golden Rule

The most important rule we must all keep in mind is the result of any analytical test can be no better than the sample on which it is performed.

- A smart individual

The Sample Life

- Collection
- Handling
- Shipping
- Preparation
- Analysis

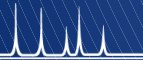


The Sample Life

- **Collection**
- Handling
- Shipping
- **Preparation**
- Analysis



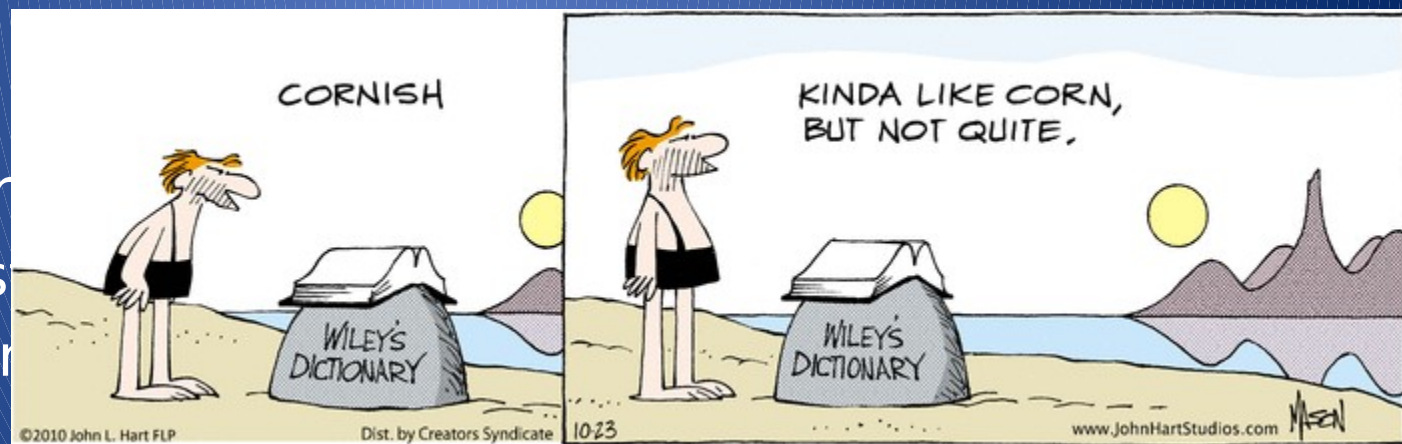
SAMPLE COLLECTION



Before Collection (B.C.)

- Test Site Criteria
 - Pesticide use history
 - Cultural practices
 - Maintenance pesticides

- Application
 - Test subs
 - Equipmen

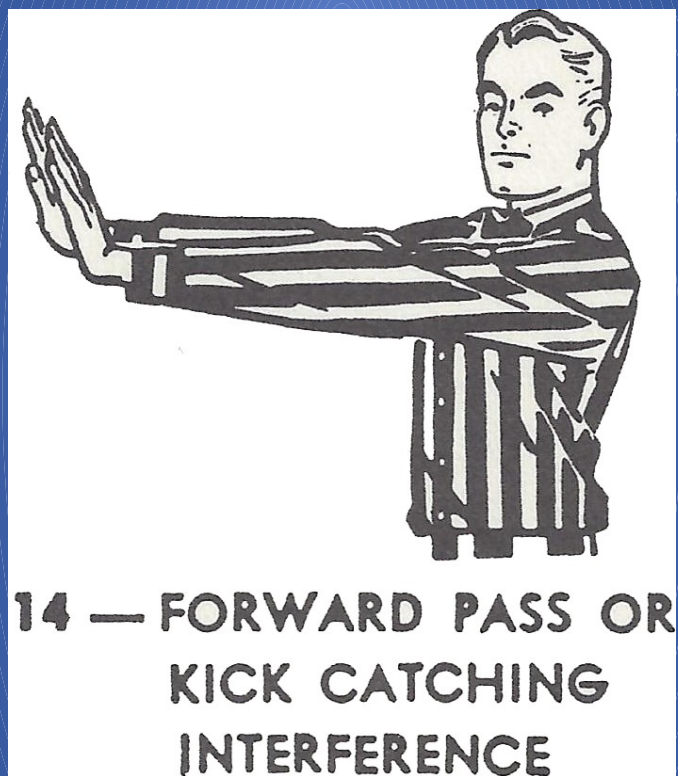


Afore Data (A.D.)

- Sampling
 - Collection timing
 - Sample size
 - Equipment cleanliness
 - Sample handling
 - Preservation
 - Sample shipment

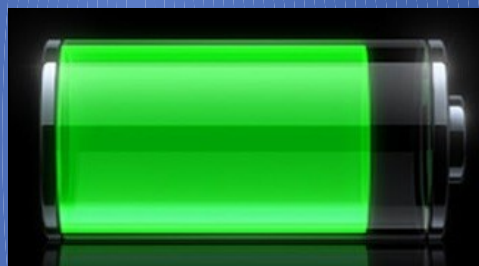


Interferences and Contamination



Chemists Think Small Scale

- Consumers think in Percent
 - 10% Juice
 - 9% Total Fat
 - 15% power



Nutrition Facts

Serving Size (343g)
Servings Per Container

Amount Per Serving

Calories 310 **Calories from Fat** 60

% Daily Value*

Total Fat 6g **9%**

Saturated Fat 1g **5%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 70mg **3%**

Total Carbohydrate 63g **21%**

Dietary Fiber 7g **28%**

Sugars 23g

Protein 5g

Vitamin A 15% • Vitamin C 6%

Calcium 30% • Iron 15%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9 • Carbohydrate 4 • Protein 4

Chemists Think Small Scale

- Residue chemists talk trace amounts
- In decades past,
 - Parts per million
- Improvements in detection
 - Parts per billion (ppb)
 - Parts per trillion (ppt)



What is a part-per-billion (ppb)?

1 Part Per Billion = 1 Drop of Water
in an Olympic Sized Swimming Pool



What is a part-per-billion (ppb)?

- 1 second in 32 years
- 1 hamburger in a chain of hamburgers circling the earth at the equator 2.5 times
- 1 sheet on a roll of toilet paper stretching from NY to London
- one kernel of corn in a 45-foot high, 16-foot diameter silo



What is a part-per-trillion (ppt)?

- 1 second in 31,710 years
- 1 inch in 657 trips around the equator (16.4 million miles)
- 1 postage stamp in 250 square miles



Sample Stability



What Affects Stability?

- Nature of the sample
 - High acid
 - High water content
 - Oily, etc.
- Chemistry
- Sample container/preservation
- Addition of preserving agent



SAMPLE PREPARATION



Sample Preparation

- Untreated samples first?
- Clean surface
- Clean equipment
 - Cutting tools
 - Gloves
 - Containers/bags



Conclusion

- All steps in the life of a sample are important and critical to the final analytical results.
- Sometimes it's ok to think like an analytical chemist – think small scale
- Study protocols are your friend.

Freezer Storage



Hello from Jacksonville!



Thank you for your
attention.