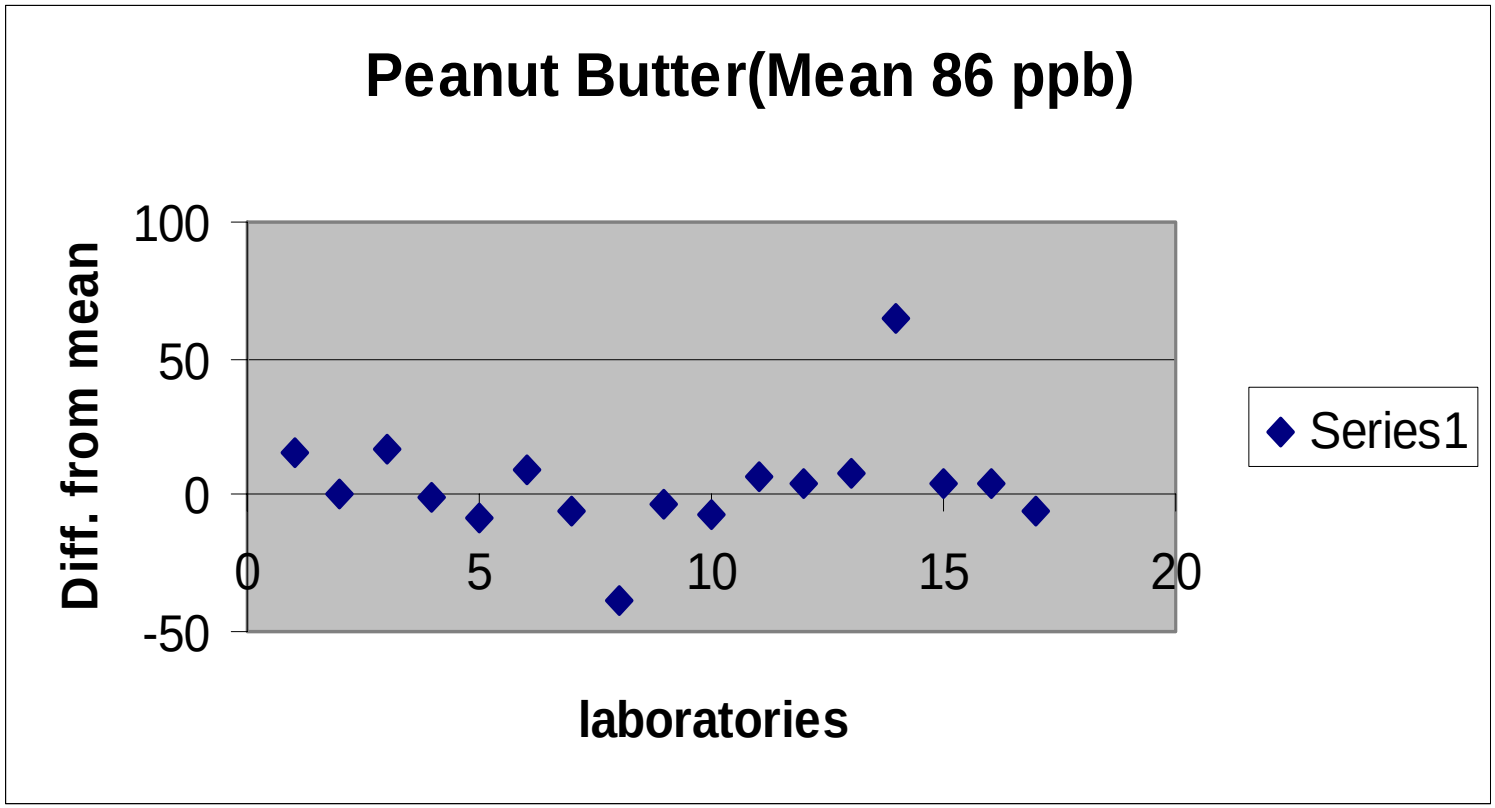
General Observations by WG

- The analysis of foods for acrylamide is at a relatively advanced level compared to the other factors.
- Exposure data indicates that improvements in analytical methods appear not to greatly affect exposure data and associated risk assessments.


Peanut Butter(Mean 86 ppb)
Diff. from mean
100
50
0
-50
0
5
10
15
20
laboratories
Series1

What is the status of analytical methods for acrylamide in foods?

- Breadth of applicability?
- Sensitivity of methods, ability to measure levels of interest?
- Confidence in identification of detected compounds as acrylamide?
- Confidence in quantitative results?
- Measuring all acrylamide in foods?

Breadth of application of methods

- Limited information from prof. programs (mostly crisp bread, cookies, etc.), although experience indicates all matrices of concern are reasonably covered.
- Need precise description of foods tested (e.g., food preparation technique, canning, etc.)

Sensitivity of methods, ability to measure level of interest

- Available methods can determine 20-50 ppb, depending upon method and matrix (use Horwitz criteria to estimate precision)
- Adequate for major food groups, may not meet the needs for some populations and some food groups.

Confidence in identification

- Yes, there are generally accepted criteria for identification.
- Current methods (set of LC/MS/MS, GC/MS) meet those criteria needs.

Confidence in numerical results

- Generally satisfactory, depending upon concentration and matrix (include variability from proficiency tests).

Are we measuring all of the acrylamide present in foods

- The best data say yes.

Availability of proficiency testing programs and other needs.

- There are regular ongoing rounds, about 10 per annum, for the use with common matrices.
  - FAPAS
  - AOCS
  - JRC
- Need “certified” reference materials for a variety of matrices (recognizing instability of acrylamide in many matrices)

Critical methodology issues

- Participation in proficiency testing
- Use of isotopic labeled internal standards
- Avoid artifact formation, e.g., during extraction and underivatized GC analysis.
- Use reagent blanks.
- Record multiple ions and relative abundance to distinguish from possible interferences.
- The retention time and peak shape must match a contemporaneously run standard.

Remaining analytical needs

- Interlaboratory validation of reference methods -join, encourage participation in JRC effort to validate methods for acrylamide in foods.
- Validated Biomarker assays
- Validated methods for precursors (3APA) at low concentrations (raw materials)

Possibility of other methods

- New derivatization techniques for non-MS analysis, (e.g., Rxn w/thiobenzoate acid, other strong fluorescent derivative)
- Streamlined underivatized MS method

Other Recommendations

- Develop methods for precursors at low levels.