Update on FAPAS acrylamide series

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FAPAS

Food

Analysis

Performance

Assessment

Scheme

Established in 1990, covers a wide range of
test materials/analytes, worldwide

FAPAS proficiency materials to date

SERIES 30. Acrylamide

R1. Crispbread

R2. Potato crisps (chips)

R3. Breakfast cereal

R4. Coffee

R5. Crispbread

R6. Breakfast cereal

R7. Oven chips (French fries) (sent out March-04)

FAPAS - acrylamide

- Test materials are 'naturally incurred'
- Materials are tested for sufficient homogeneity
- Results are examined to find the assigned value which is the best estimate of the true concentration and is a consensus value
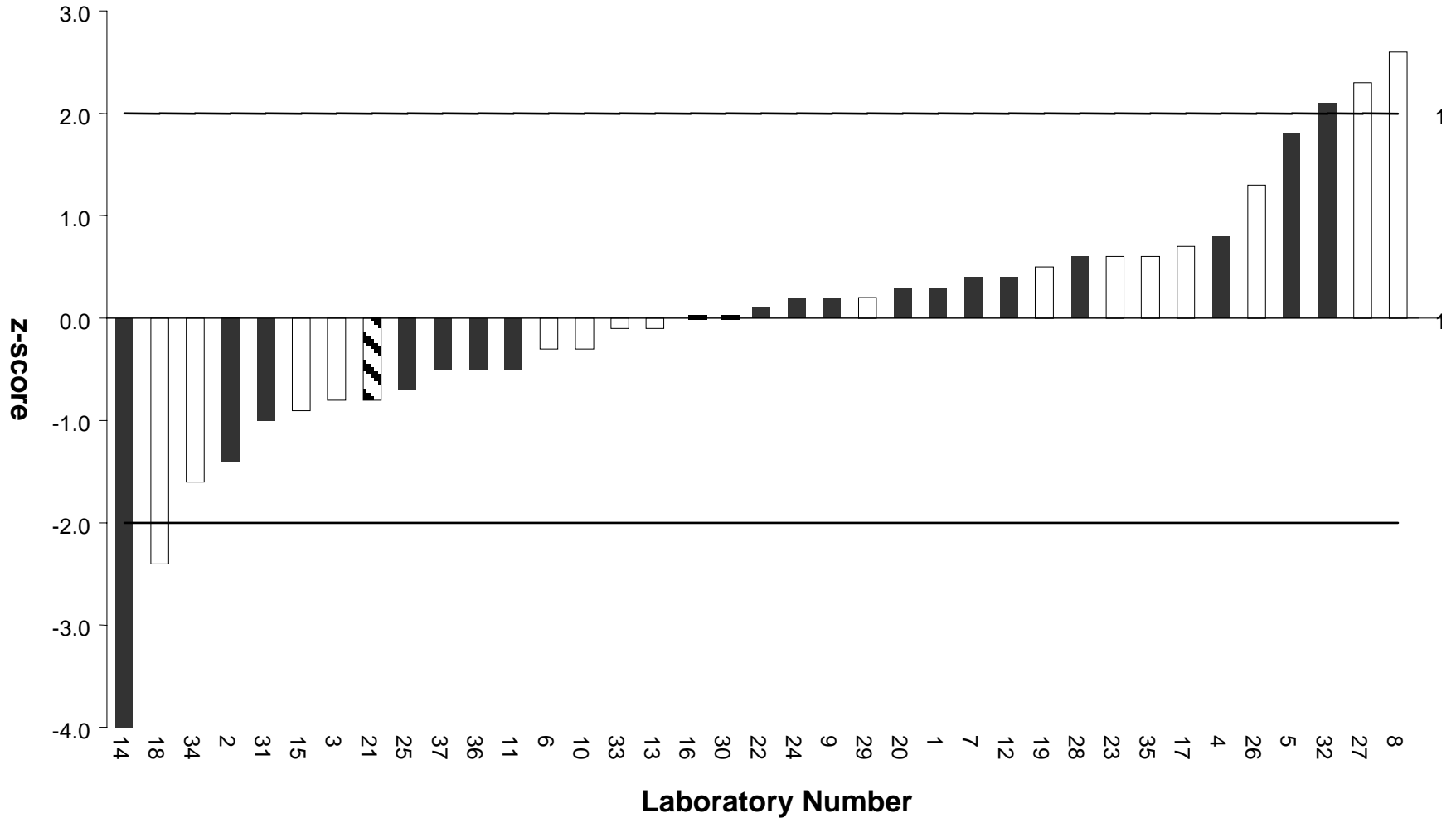
Boundaries for:

- Satisfactory $-2 < z < 2$
- Questionable $-3 < z < 3$
- Not satisfactory z outside +/ 3

Performance set empirically using Horwitz/modified Horwitz equation

General format for FAPAS z-scores
Acrylamide Round 1. Crispbread. Sept-02

FAPAS Test materials

Round Date	R1 Jul-02	R2 Nov-02	R3 Feb-03	R4 Jul-03	R5 Aug-03	R6 Nov-03
Test material	Crisp-bread	Potato crisps (chips)	Cereal	Coffee	Crisp-bread	Cereal
Assigned value (ppb)	1213	167	109	312	707	95
Satisfactory range (ppb)	836-1590	97-237	61-158	193-431	468-945	53-137

Performance in acrylamide analysis

	R1	R2	R3	R4	R5	R6
Return rate	67%	95%	85%	76%	79%	64%
Participants	37	40	35	31	45	29
% satisfactory	86%	87%	71%	87%	71%	82%

Accredited labs - % satisfactory

	R1	R2	R3	R4	R5	R6
% lab accredited	7 / 37	11 / 40	10 / 35	9 / 31	12 / 45	9 / 29
% satis. by these labs	100%	91%	80%	100%	66%	100%

Measurement technique used
% satisfactory

	R1	R2	R3	R4	R5	R6
GC-MS	48% 84%	46% 89%	39% 79%	35% 91%	44% 70%	53% 73%
LC-MS(MS)	52% 91%	54% 90%	61% 68%	65% 85%	53% 76%	47% 86%
other	ECD 100%	-	-	-	DAD 0%	DAD 100%

Examination for sign of bias
average z-score (satisfactory scores only)

	R1	R2	R3	R4	R5	R6
GC	-0.09	-0.11	0.1	0.15	0.41	-0.07
LC	0.04	-0.24	-0.03	-0.14	-0.006	-0.21

Extraction solvent used

	R1	R2	R3	R4	R5	R6
Water	62%	82%	77%	77%	70%	80%
Aqueous	16%	5%	6%	16%	19%	13%
Non-aq.	22%	13%	17%	6%	11%	7%

Non-aqueous z-scores by round

	R1	R2	R3	R4	R5	R6
MeOH	-0.3, -4.0	-0.3	49.9			-2.1
PrOH	0.5, 1.3	11.2	0.2	2.3	1.4, 0.8	
EtOAc	2.6	-0.8	15.6, 1.6, -0.4,	0.0		
DCM/EtOH	2.1	-3.1	-1.9			
DCM					-4.5	
MeCN					-0.5	

Round 30-06

Direct (underivatised) GC analysis

n=4 labs

Z= 2.7, 0.2, 2.6, 1.4

Extraction = HW, CW+EtOAc, HW, CW+PrOH

FAPAS proficiency materials - planned

SERIES 30. Acrylamide

R7. Oven chips (French fries) (sent out March-04)

R8.	Coffee	July-04
R9.	Crispbread	Sept-04
R10.	Breakfast cereal	Nov-04
R11.	Potato crisps (chips)	March-05

FAPAS Acrylamide rounds conclusions

➢ Plain water extraction seems OK

➢ GC & LC methods seem to be equivalent

➢ Underivatised GC method may be problematic ?

➢ Accuracy seems OK

➢ Is the precision really acceptable ?

FAPAS - acrylamide

(end)