

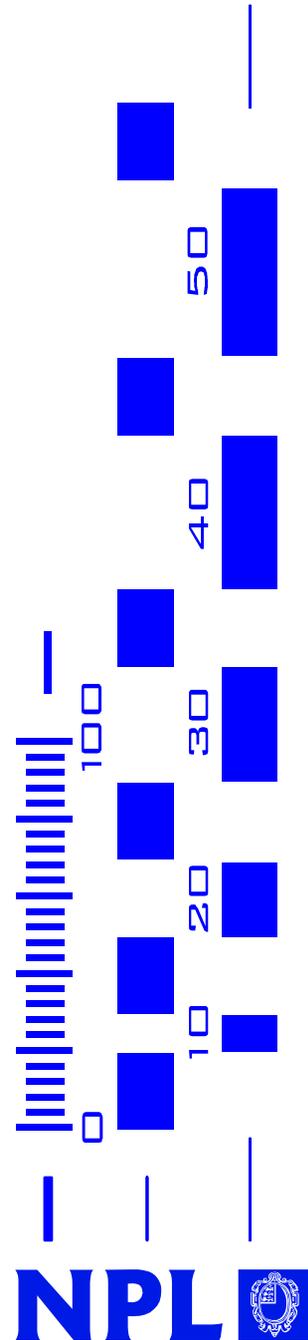
Environmental Comparison Workshop

September 2004

Low Energy Beta Emitters

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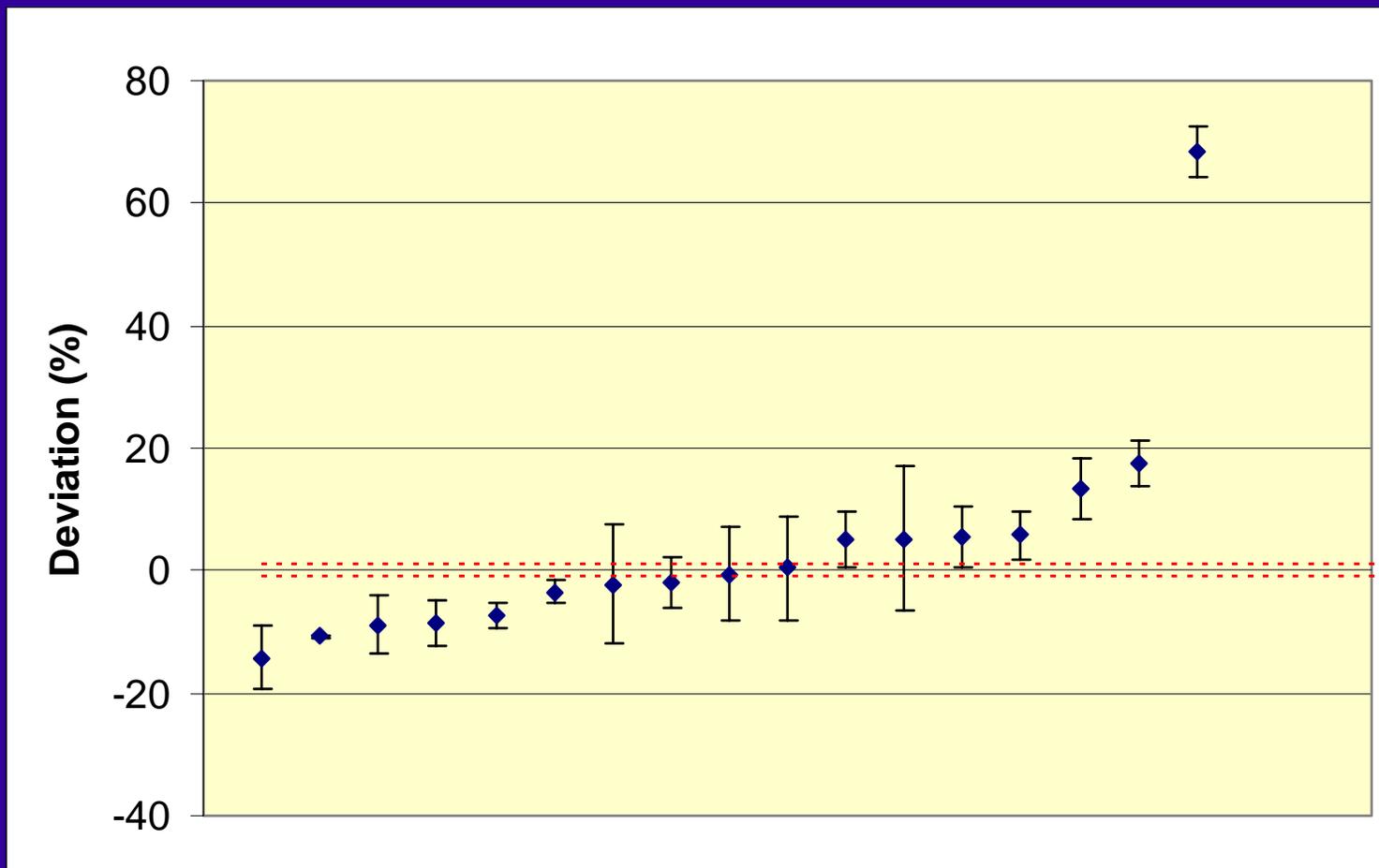


Variations in Tritium mixtures

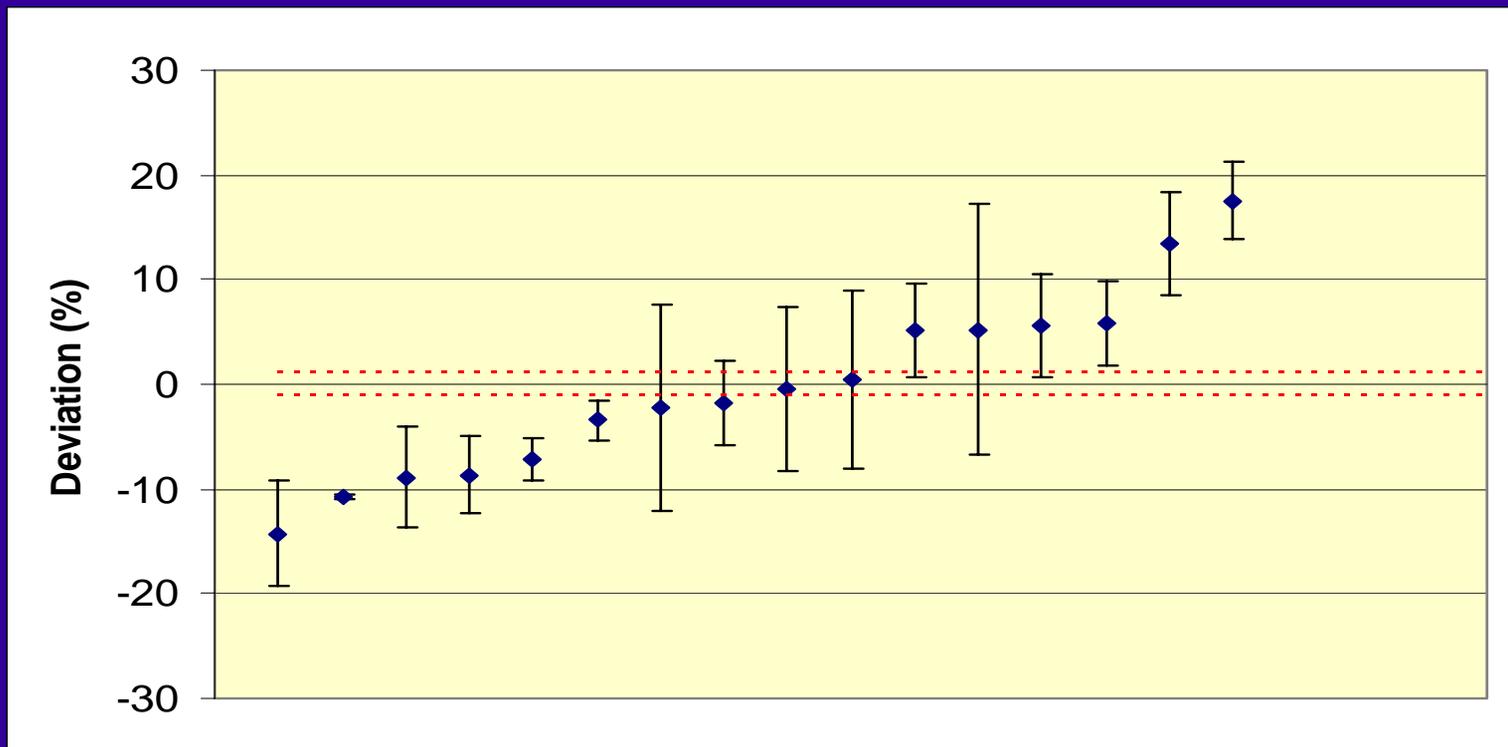
Activities in Bq.g⁻¹

	³ H	¹⁴ C	³⁵ S	⁹⁰ Sr	⁹⁹ Tc	¹²⁹ I	²¹⁰ Pb
2001	20	-	-	2	2	-	4
	0.025	-	-	0.0025	0.0025	-	0.004
2002	20	20	20	-	-	-	-
	0.025	0.025	0.025	-	-	-	-
2003	0.5	-	-	-	-	0.5	-

2003 Comparison (H-3)

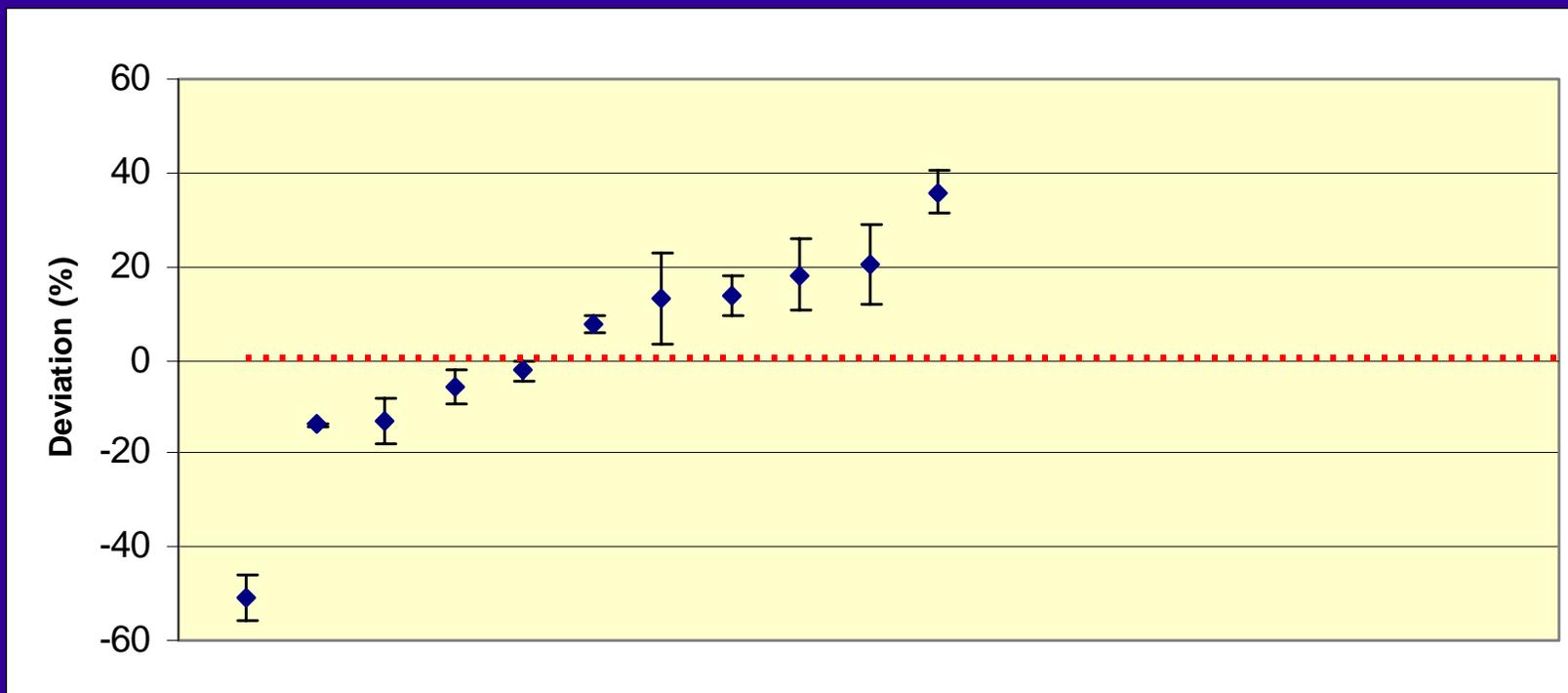


2003 Comparison (H-3)



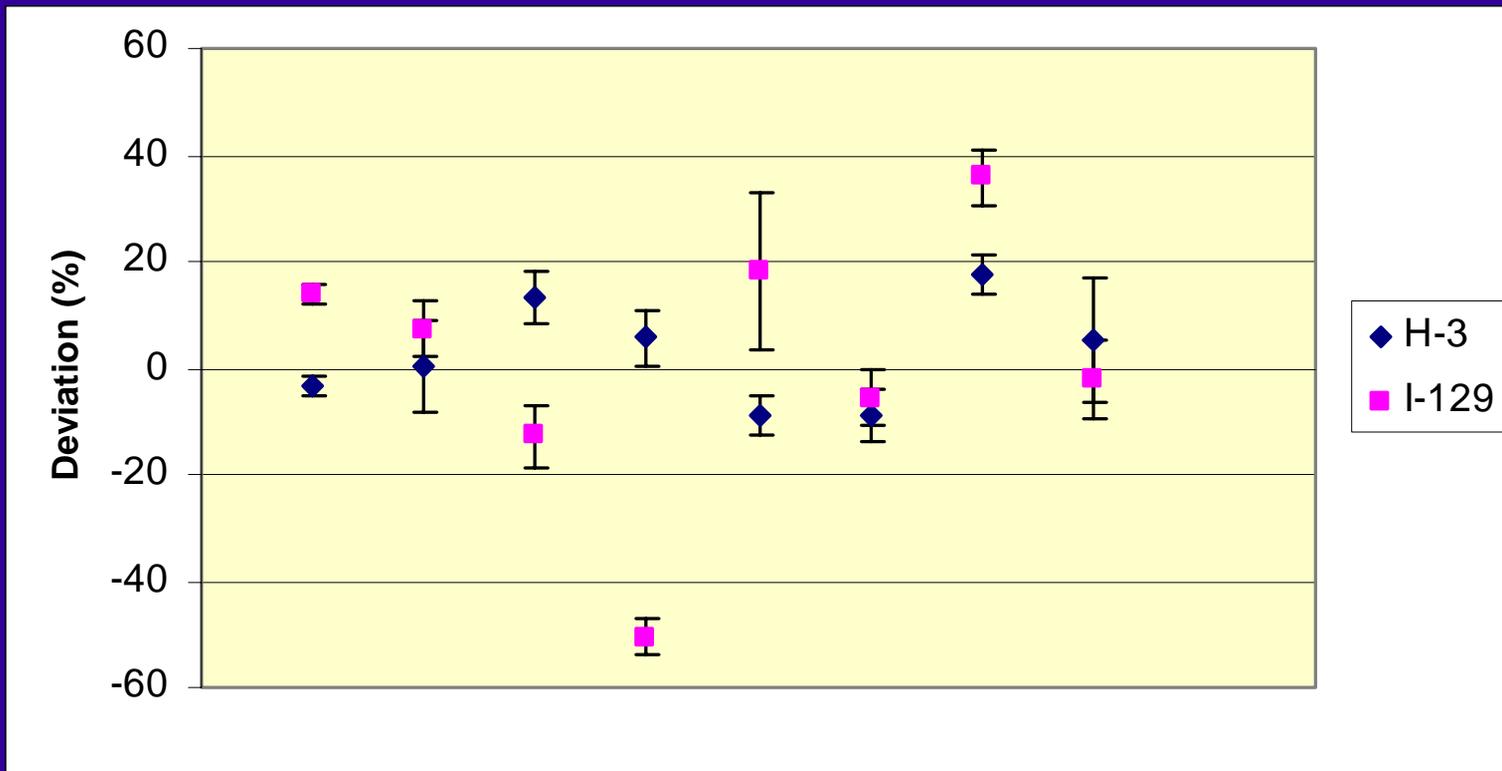
- Outlier removed
- One lab reported uncertainty 2.5 times smaller than the NPL value
- ~ 50 % of results are discrepant
- "Typical" uncertainty ~ ± 5 %

2003 Comparison (I-129)



- Two (?) obvious outliers
- One lab reported small uncertainty ~ same as NPL value
- ~ 50 % of results are discrepant
- "Typical" uncertainty ~ ± 5 %

2003 Comparison (H-3 and I-129)



- No obvious correlation between H-3 and I-129 results

Comparison with Previous Results

³ H	Bq.g ⁻¹	Total no.	u-test values					Typical uncert.
			< 1.64	1.64-1.96	1.96-2.58	2.58-3.29	> 3.29	
2001	20	11	55%	18%	9%	0%	18%	5 %
	0.025	8	63%	0%	13%	0%	24%	10 %
2002	20	17	76%	6%	6%	0%	12%	10 %
	0.025	6	100%	0%	0%	0%	0%	10 %
2003	0.5	17	53%	6%	6%	12%	23%	5 %

Using ± 10% for all 2003 results

88%	6%	0%	0%	6%
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Questions?

- **Why are almost half of results possibly discrepant?**
 - problems with method?
 - underestimation of uncertainties?
 - activity dependent?
 -?
- **2002 low activity results were “good”**
 - but, there were only 6 participants
 - were these 6 more “expert”?, do we have something to learn from them about the method?
 - were they just more realistic about their uncertainties?
 -?

