

Update on Trichloromethane (TCM)

Moorepark Milk Quality Workshop
December, 2014

B. O'Brien, D. Gleeson, S. Murphy



The Irish Agriculture and Food Development Authority

Development of TCM

- TCM arises from cleaning and disinfecting procedures that involve chlorine containing solvents
- Normal to use chlorine compounds - most effective and economical antimicrobial - >90%
- Active chlorine contact with an organic material, forms total organic chlorine
- Incorporates - TCM
- TCM develops within the detergent solvent
- Used and often re-used – develops further
- If the detergent solvent is not removed by rinsing, then, TCM will be transferred to the milk

Critical points of control of TCM

- Rinse volume of water after milking
- Rinse volume of water after detergent-sterilizer wash cycle
- Chlorine content of detergent-sterilizer
- Volume of detergent-sterilizer used
- Addition of chlorine to rinse water
- Recycling of detergent-sterilizer solution
- Cluster dipping in chlorine
- Recycling of rinse water

Processor – IDB - Moorepark project: 4-pronged approach

TCM analysis

- Set up of Methodology and Validation at Moorepark laboratory
- Current annual sample throughput = 25,000 samples

Correction of TCM problems on-farm

- Initial farm visits together with advice on solving problem
- Communication of results and information with milk quality personnel and through regular technical meetings

Research - Controlled experiments on reducing TCM in milk while maintaining good microbiological quality

- Laboratory based studies
- Moorepark milking parlour based studies
- Farm based studies

Chemical analysis of detergent-sterilizer products

- Web page set up to inform industry on different detergent products based on chemical analysis
- <http://www.agresearch.teagasc.ie/moorepark/articles/Chemicalanalysisofdetergentsterilizerproducts.pdf>

Sampling Statistics May – Nov 2014

No. loads received, tested and reported: 89

Total no. of samples tested: 14,598

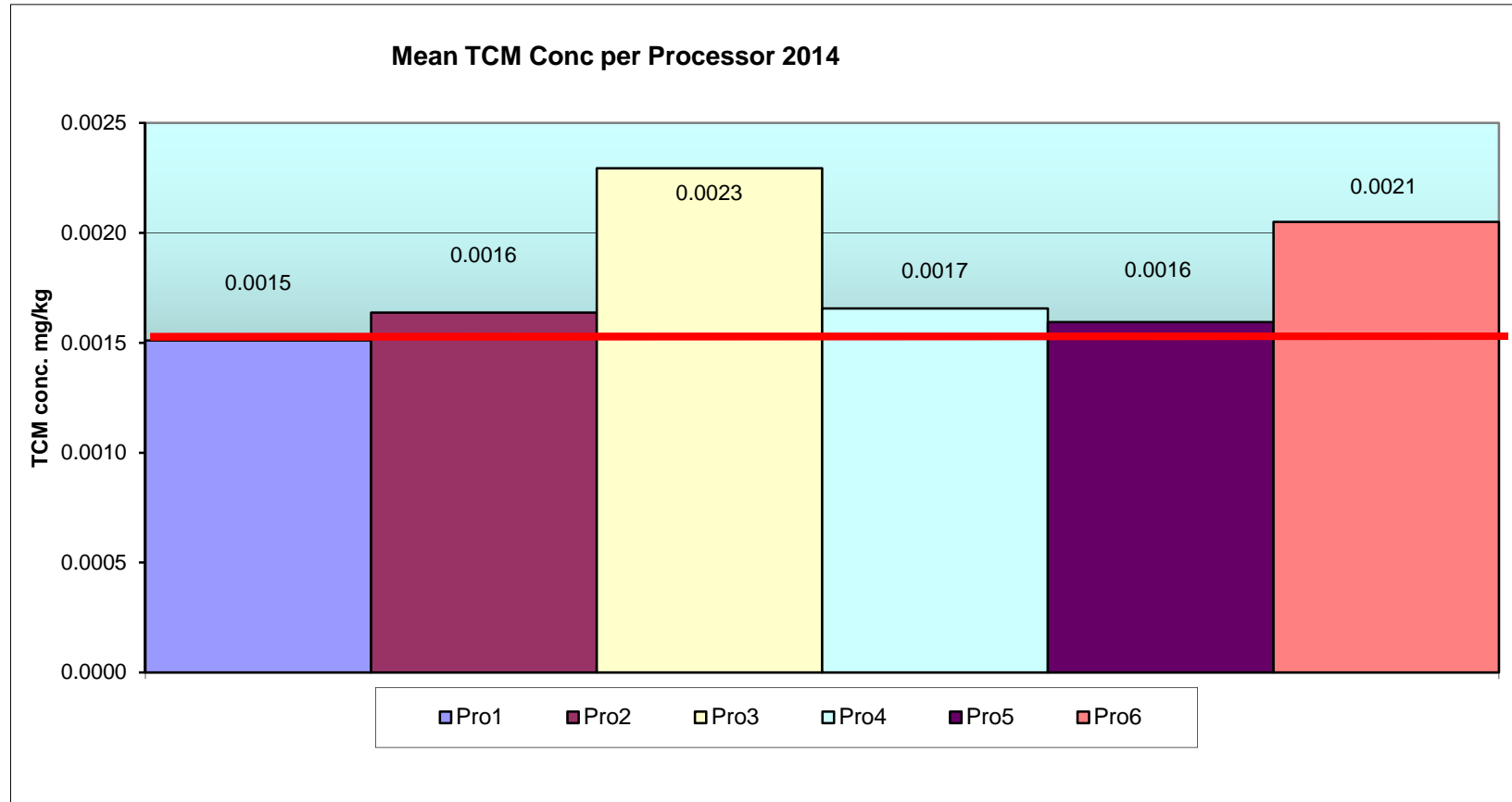
Breakdown:

- No. of milk samples tested: 13,902
- No. of repeat milk samples tested: 469
- No. of cream samples tested: 113
- No. of additional samples tested: 114 (special requests)

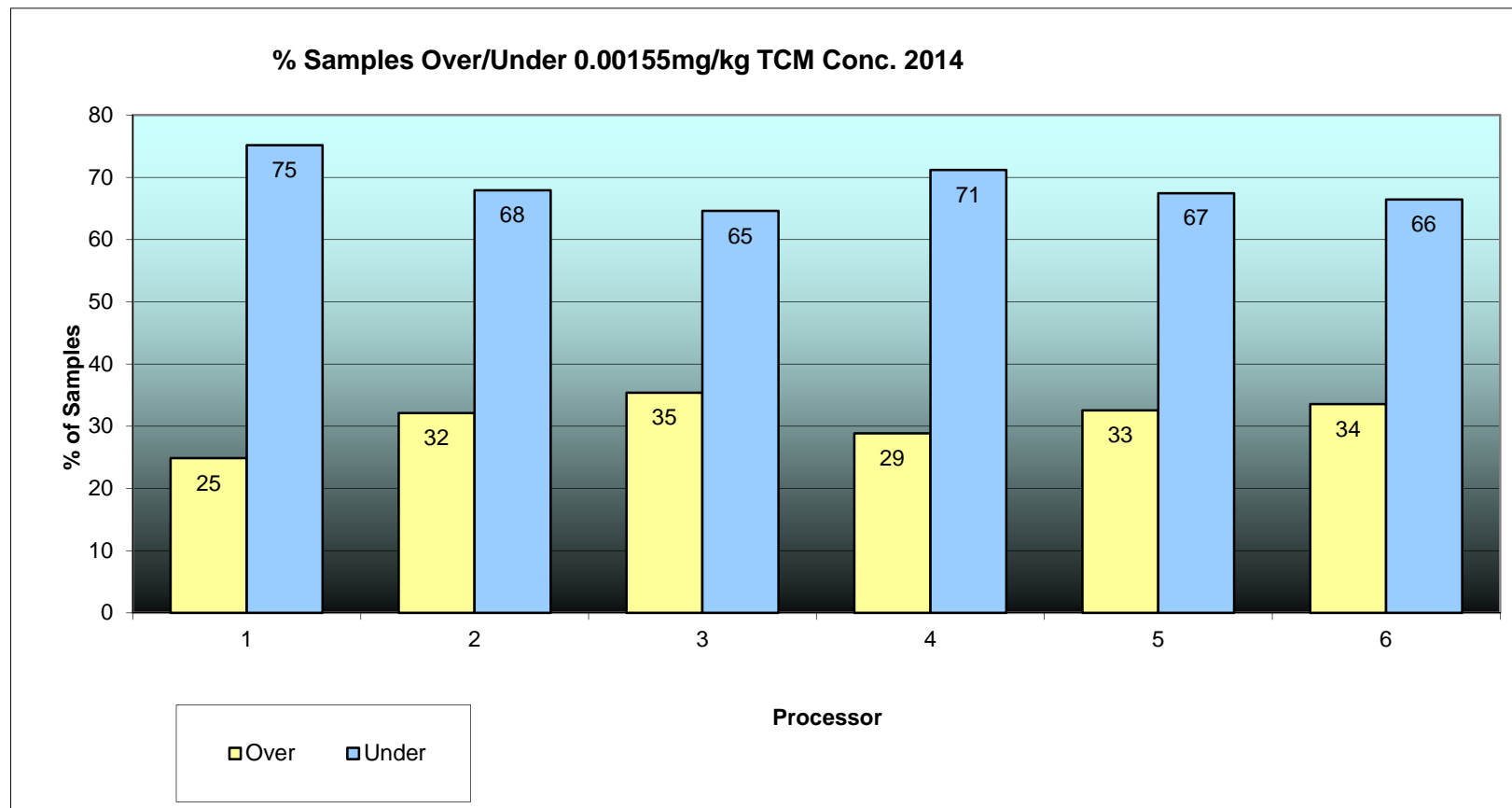
Average turnaround time: 6 days

(Turnaround time is number of working days from date received to date reported.)

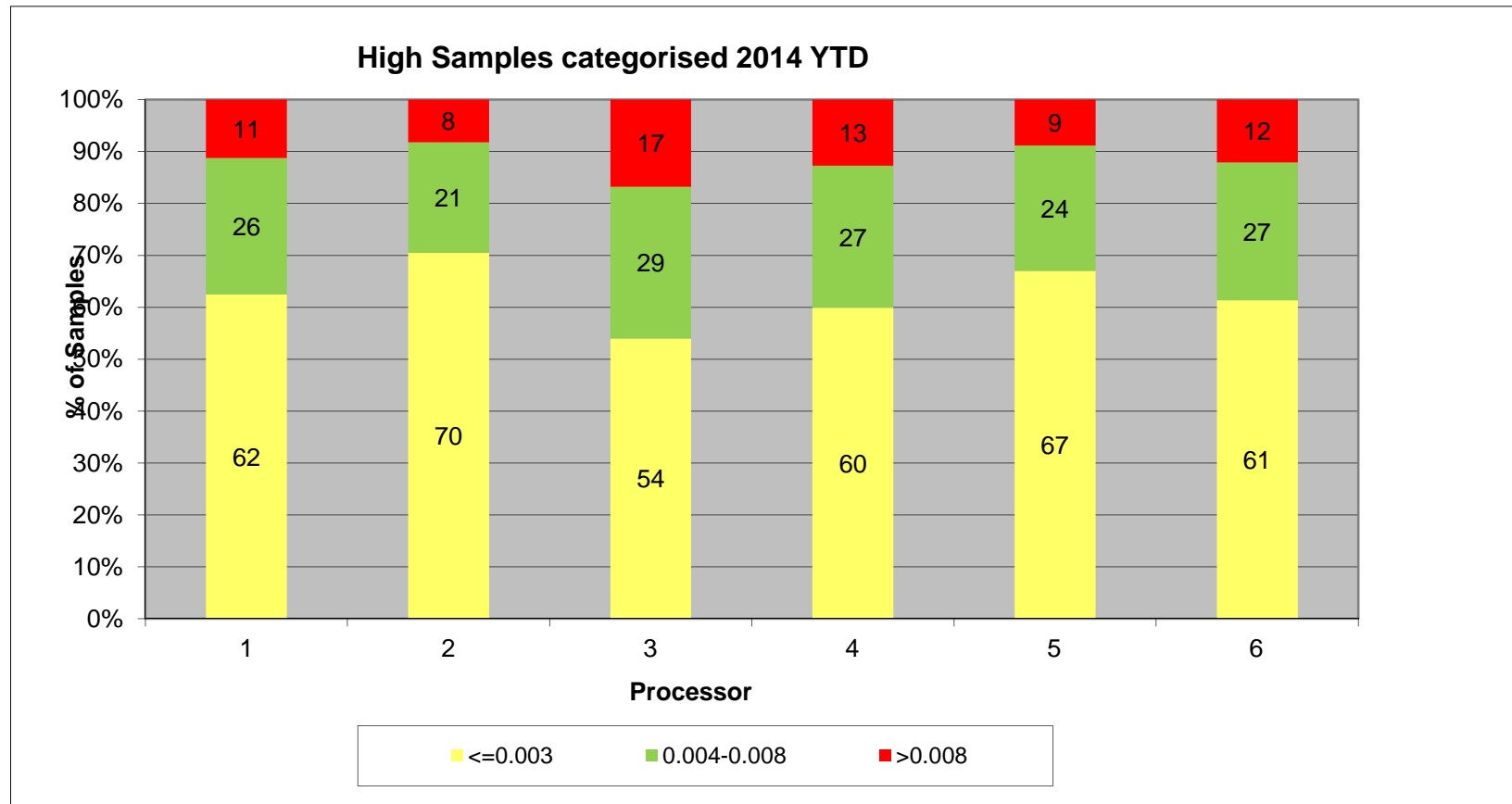
Results – mean TCM values



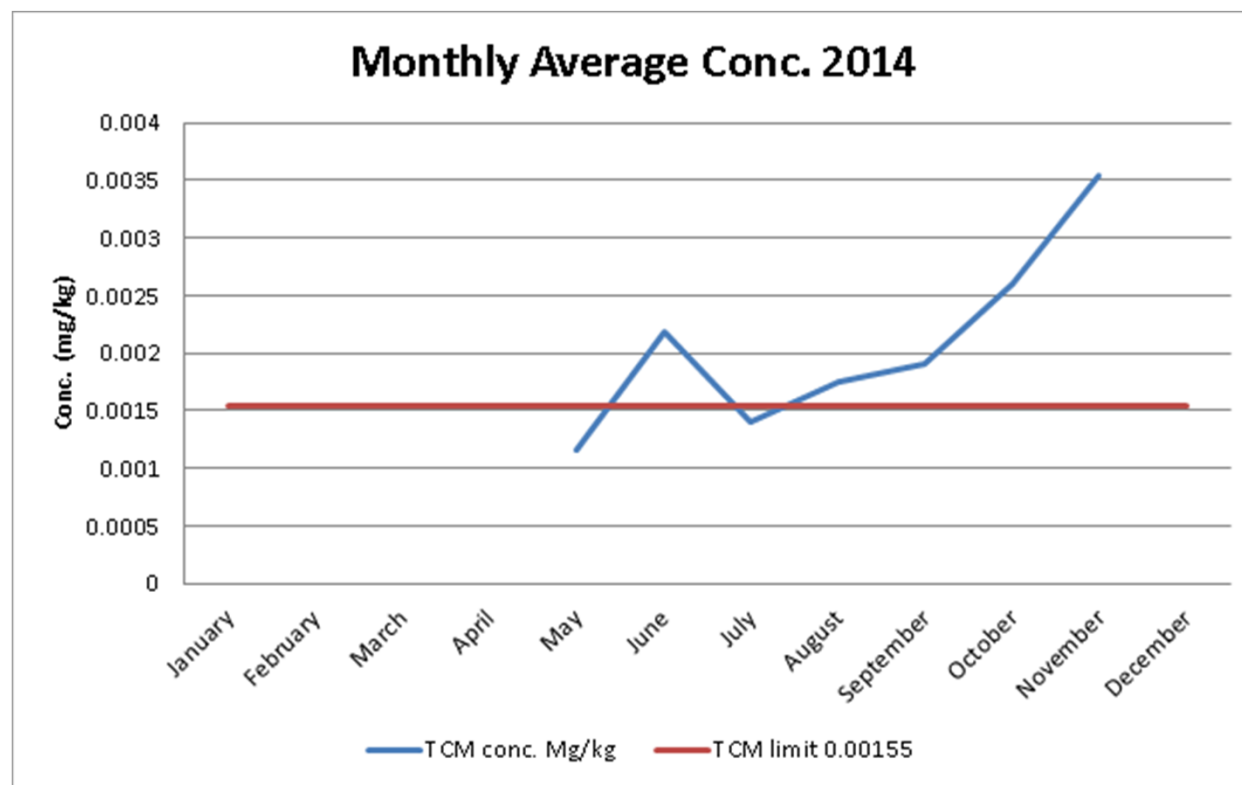
Results - % over/under the limit



Results – breakdown of high samples

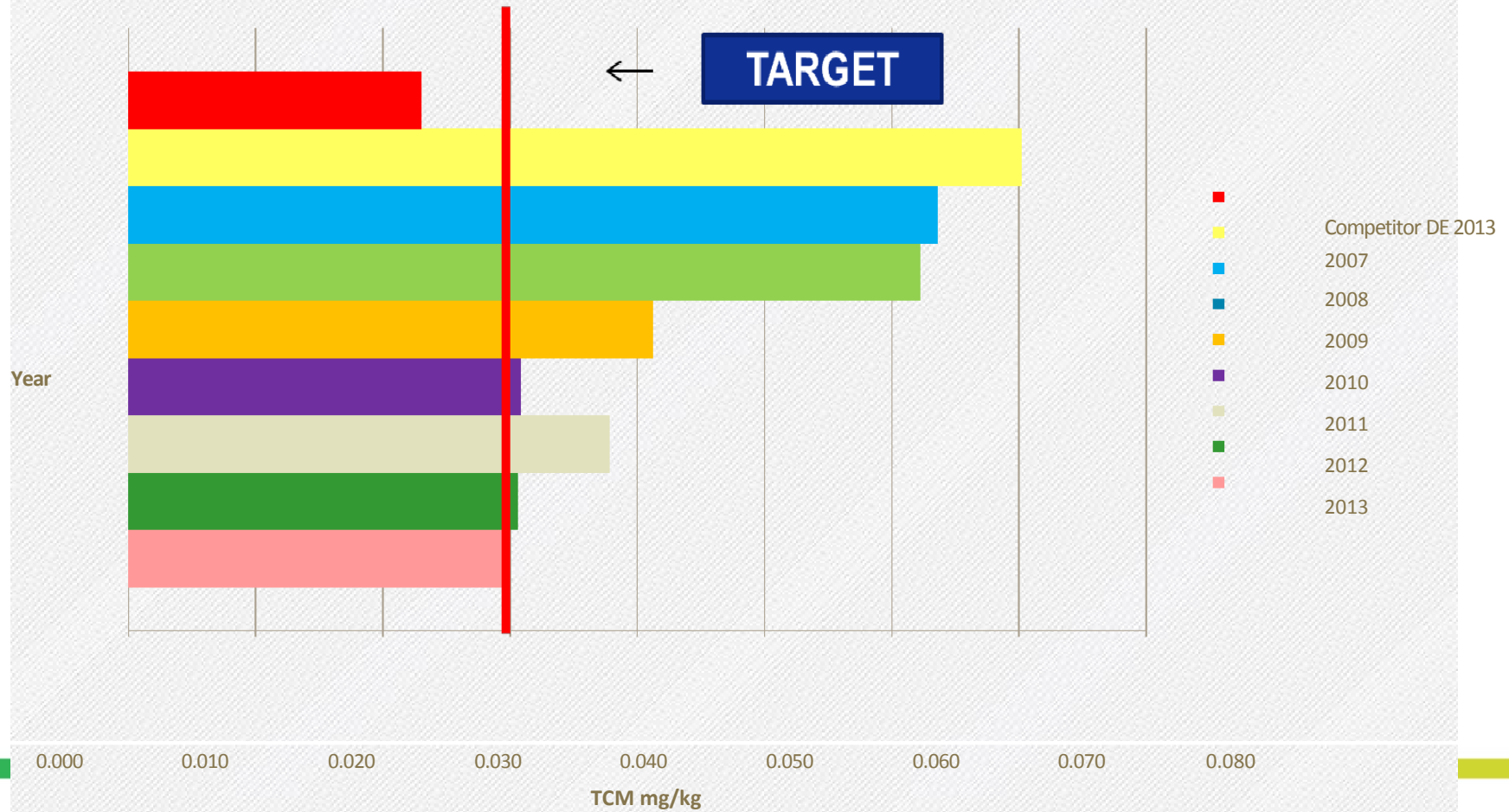


Monthly average – new samples (not repeats)



TCM Trend Average 2007 - YTD June 2014

TCM Trend 2007- YTD June 2014



Summary of Results

- One processor achieved limit of 0.0015mg/kg
- 3 Processors over the limit but very close to it
- 2 processors = over 0.0020mg/kg
- Range of results over the limit = 25 to 35%
- 8-17% of high samples are in “red zone”
- Monthly average graph shows slight increase in mean values in winter months – lower volumes, less collections