

What interpretation, RAEMA, a Proficiency Testing Scheme in food microbiology, supplies to laboratories



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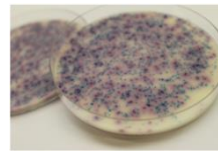
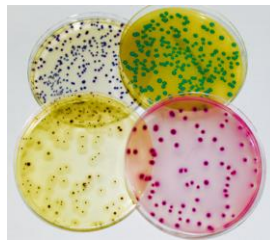
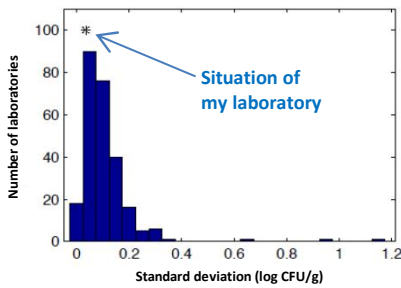
réseau d'analyses et d'échanges en microbiologie des aliments

animal société aliment

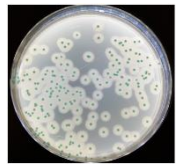
The role of proficiency testing (PT) provider is to supply homogeneous and stable samples. This is necessary to **assess performances** of participants. **Performances can be evaluated using different criteria.** This is proposed by **ASA** (association Animal Société Aliment), **accredited by Cofrac** (accreditation N°1-1836, scope available on website of Cofrac www.cofrac.fr) according to **ISO 17043** which has been organizing **RAEMA** (Réseau d'Analyses et d'Echanges en Microbiologie des Aliments), a **proficiency testing scheme in food microbiology**, since 1988.

Precision by « I index »

- Calculation of I index possible as 5 samples (*k*) are analyzed by laboratories.
- Comparison of standard deviation of each participant (*s*²) to standard deviation's mean (*s*^{*2}) estimated with robust algorithm:



$$i = (k-1) \cdot \frac{s^2}{s^{*2}}$$

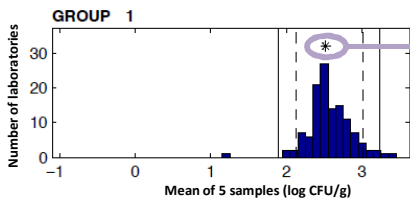
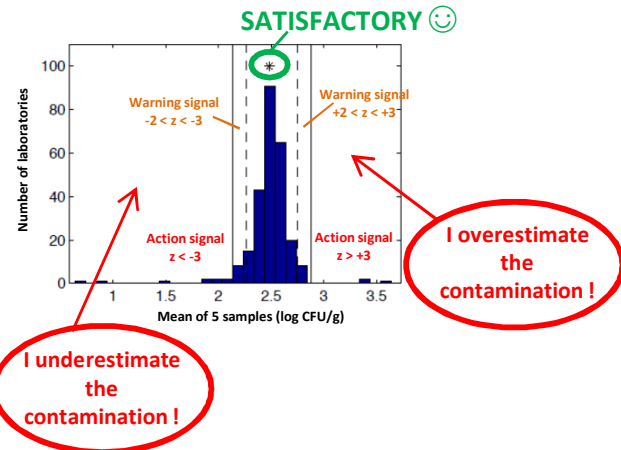


Trueness by « z-score »

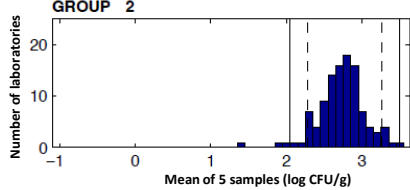
- Comparison of mean of each participant (*m*) to assigned value (*m_{pt}*) estimated with robust algorithm from mean of all participants:

$$z = \frac{m - m_{pt}}{\sigma_{pt}}$$

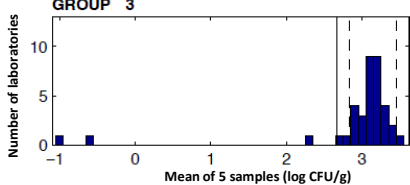
Distribution of results



The position of my laboratory according to my analytical technique. My result is closer to my practice.



Formation of 3 groups

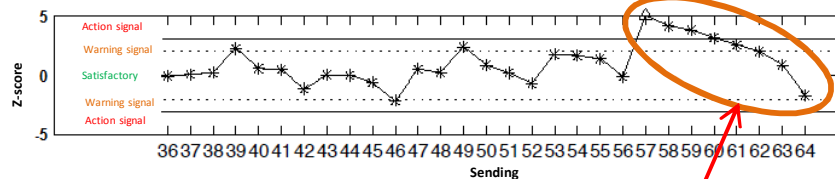
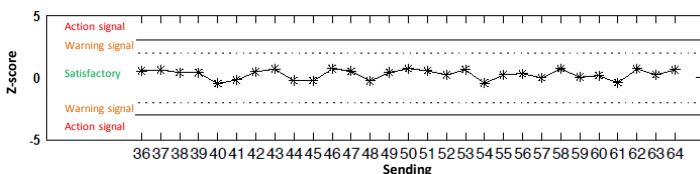


- **Analytical techniques taken into account:** culture medium, incubation temperature, incubation duration, ...
- Test by **Anova** and formation of homogeneous laboratory groups.
- Assigned value calculated for each group and z-score according to each group.



Evolution of z-score with time

- **Indicator**, easy to monitor with a **control chart**.
- Situations out of control defined in standard **ISO 11133** (exceed action signal, 6 successive increase or decrease, ...).
- **15 years follow-up.**



Situation under control

« WARNING »
• 6 successive decrease
• Situation out of control