



## NEWS: Screening method Melamine in raw milk

Over the past weeks a screening method has been developed and tested by Delta Instruments. The screening method is closely related to the NPN-CU (Non Protein Nitrogen- calculated urea) approach, based on the milk model for NPN and has therefore been baptized NPN-CM or NPN-Calculated Melamine.

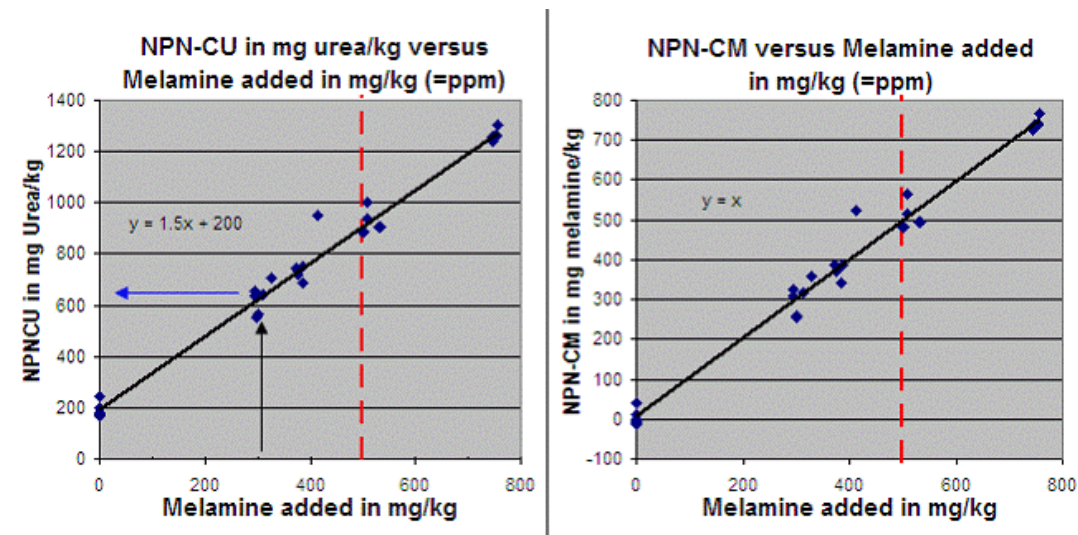
In case of unadulterated milk, accurate estimates of urea are calculated from IR-readings for the NPN contents of milk samples through simple slope/intercept adaptation of NPN-readings.

In case of adulteration with melamine as to increase the protein content of milk, a useful estimate of the melamine content can be calculated in the same way from the NPN content, since both urea and melamine show a strong response for the NPN milk model.

The detection or discrimination limit using the NPN/CM approach for screening melamine in milk is set to 500 ppm or higher. This is exemplified in the below figures displaying NPN-CU and NPN-CM as a function of melamine added to various samples of herd milk. Without melamine added estimates for NPN-CU average out at approx. 200 mg urea/kg milk, a regular level of urea in milk. Upon addition of 300ppm of melamine, NPN-CU readings rise to on average 650 ppm. With 500 ppm added the NPN-CU response even increases to 900 ppm. Values of 800 ppm urea and higher are rarely observed with regular herd milk, thus a discrimination limit for samples considered "suspicious or not" can be set to a level of 500 ppm or 0.05%*m/m* melamine added to milk.

0.05%*m/m* melamine added to milk, corresponds (theoretically) to  $\pm 0.2\%$  protein as determined by N-Kjeldahl and with  $\pm 0.15\%$  protein as determined using standard models for Protein by IR. Given the protein content of regular cow milk is on the order of 3%*m/m*.

Research is carried out after the selective detection of melamine on the basis of a full spectrum model for melamine. The validation of the model is still incomplete, but the first results indicate that using this approach the discrimination limit in cow milk might be lowered further by a factor of 5, i.e. to 100 ppm.



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