

## National Mastitis Council

### Guidelines For Accurate Sampling and Reporting of Bulk Milk Cell Counts

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The bulk tank somatic cell count (BTSCC) is an internationally accepted measure of the quality and suitability of milk sold from the farm for human consumption. It is used by regulatory agencies to permit or exclude milk from interstate or international trade. Dairy cooperatives and processors may partly price the value of milk based on BTSCC. The National Mastitis Council (NMC) recommends that the following guidelines be used for the determination and reporting of BTSCC, to ensure accurate representation of the milk shipped from a farm.

1. Bulk tank milk samples must be collected, identified, handled and tested by personnel and protocols certified by the regulatory agencies of jurisdiction to ensure the accuracy of the BTSCC.
2. Bulk tank milk must be sampled so that all cows contributing milk to the bulk tank are represented proportionally according to the amount of milk contributed.
  - (a) If a bulk tank contains all of the milk from all cows being milked in one day (or complete multiples thereof), then one sample of that bulk milk is sufficient. However, if the pick-up only takes a portion of the milk that is produced in a given day, then the volume of each portion must be known and a sample taken.
  - (b) If there are multiple pick-ups during the day or multiple bulk tanks are used to hold milk from all of the farm's cows, then each tank should be sampled each time milk is removed.
  - (c) If each pick-up represents the supply from more than one day but not a whole number of days, then the tank should be sampled when it contains the output for one or more complete days.
3. The BTSCC to be reported for any day or any multiple-day period (up to 7 days) should be the weighted arithmetic mean of the BTSCC from all samples taken for that period.

*Examples:*

A) One collection per day: use the BTSCC determined for the appropriately collected sample

B) Two or more collections per day, or more than one tank:

$$BTSCC = \sum_1^n (SCC \times vol) \div Vol$$

n = number of loads or tanks/day

SCC = somatic cell count of the individual sample

vol = amount of milk in the individual load or tank

Vol = total volume of all loads or tanks

4. The BTSCC for a month should be reported from at least one complete day or a daily arithmetic average for a multiple-day period reported during each month.

*(continued)*

5. In some instances, e.g. with certain United States milk buyers or companies involved in international trade with the European Union etc., milk suitability is determined by the geometric mean of the BTSCC. In these cases, a rolling geometric mean of the BTSCC for the last three months should be used.
6. The three-month geometric mean is a monthly rolling value calculated from all individual daily averages collected from the previous three complete months.

$$\text{The BTSCC}_{\text{GM}} = \text{antilog } 1/n \sum_1^n \log X_i$$

$X$  = each individual BTSCC, daily values as defined in #3 above  
 $n$  = number of samples taken in each three-month period; usually 3 if monthly counts are made or 13 when weekly counts are made.

The calculation is made by summing the logarithm to base 10, of each daily BTSCC, taking the mean, and obtaining the antilog.

NOTE: The geometric mean will be lower than the arithmetic mean. The geometric mean has a lower variance thereby reducing the significance of individual values, which are perhaps related to sampling or measurement errors.

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*This document was developed by the National Mastitis Council Milk Quality Monitoring Committee and approved by the National Mastitis Council Board of Directors, February 2002.*

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