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## **Iodine residues in bulk-tank milk: Economic versus consumer imperatives**

**Gale E. West (gale.west@ulaval.ca)**

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## **Iodine residues in bulk-tank milk: Economic versus consumer imperatives**

Health Canada considers that excess human consumption of iodine is not safe, especially for young children, and dairy products provide over 50% of dietary iodine intake and (Hemling, 2001). Children under 8 years of age who consume even marginally above the current recommended number of servings for milk (500 ml per day according to Health Canada's Food Guide) could be at risk of consuming excess iodine in their diet. Because of concerns about iodine levels in the Canadian milk supply, the Dairy Farmers of Canada, in consultation with Health Canada, recently suggested an interim upper limit for iodine levels in bulk-tank milk on dairy farms. Iodine levels in the majority of dairy producers' bulk-tank milk are below this iodine target level, approximately 20% of herds exceeded the upper limit (Brander, 2002).

Iodine in milk comes from several potential sources including iodinated cattle feed supplements, teat dips and udder washes, iodine-containing sterilizers of milking equipment, and iodophor medications (European Commission, 2002). Many dairy farmers use iodine-based products to prevent, control and treat cases of bovine mastitis among their lactating herd. When mastitis is not adequately prevented or controlled, bulk-tank milk becomes contaminated with excess somatic cells. When cell counts reach a certain threshold, dairy producers cannot sell their milk.

The first objective of this paper is to explore producers' understanding of the dual imperative to ensure both milk quality and udder health and assess current use of Best Management Practices (BMPs) related to milk quality and iodine management. A second objective was to identify correlates between producers' perceptions and on-farm practices and actual iodine level laboratory test results done on bulk-tank milk from their farm.

To achieve these objectives, a questionnaire was developed in English, and then translated into French. It was distributed to 3,180 dairy producers in Québec (n=1,197), Ontario (n=1,200), Prince Edward Island (n=200) and Alberta (n=583) between July and September 2012. Each producer had the choice to respond either through a Web-based questionnaire or by an identical paper copy sent through the mail. The total response rate was 31.2% (N=993). Base-line descriptive statistics of responses, as well as Spearman's bi-variate correlation coefficients, were calculated for this paper.

Findings indicate that producers agree that excess iodine in milk will lead to loss of consumer confidence in milk (70.5%), but between iodine excess and mastitis, their priority is to control mastitis (82.8%). A substantial proportion of them believe that milk with excess iodine is safer to drink than milk with excess microbes (40.6%).

Between 58.6% and 73.1% of producers attribute iodine excess in milk to udder disinfectant use and milking procedures, while between 37.5% and 41.1% agreed that excess iodine is the result of dietary components.

Adoption of various BMPs for mastitis and iodine control varies significantly. Only 64% of producers agreed that their milkers consistently wear gloves during every milking, while 75.5% admit being quite worried about mastitis. For 77.9% of herds, pre-milking udder treatment consists of using a disinfectant dip or wipe treated with udder wash, while only 7.6% report using a disinfectant spray. Single paper or cloth towels are used for teat cleaning before milking in 83.7% of herds. Likewise, 83.7% of the herds received a disinfectant dip treatment at post milking versus only 14% receiving a post-milking disinfectant spray. For 96.6% of those herds receiving a post-milking disinfectant dip, the dip coverage goal is at least the bottom two thirds (2/3) of each teat.

Herd veterinarians (77.1%), milk testing laboratories (29.39%), feed company advisors/agronomists (15.29%) and "*The Milk Producer*" magazine (14.69%) were identified as the most preferred information channels according to the usefulness. However, 77.2% of producers admit that it is very or quite useful to have discussion with other dairy producers.

Statistically significant correlation coefficients confirm relationships between laboratory tested iodine levels in on farm bulk-tank milk and the farm's use of iodine-based disinfectants, type of teat preparation during milking and use of dietary or premix supplements. Producers' attitudes and perceptions of mastitis and iodine are also significantly correlated with their on-farm practices to prevent and control both mastitis cases and excess iodine in their bulk-tank milk.

Faced with the certainty of revenue losses from uncontrolled mastitis cases in their herd, Canadian dairy farmers prioritised continued use of iodine-based disinfectants over increased control over iodine residues in their bulk-tank milk. They perceived somatic cell residues as being more detrimental to human health than excess iodine levels. Those who strongly held this opinion and who had lower levels of adoption of iodine control BMPs tended to have higher tested levels of iodine in their bulk-tank milk. If iodine levels are not adequately controlled, consumer confidence in the Canadian dairy industry could be jeopardised.

Brander DL. 2002. *Risk factors for iodine in raw and processed milk in Ontario*. MSc. Thesis. Faculty of Graduate Studies of the University of Guelph.

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