Reducing the risk of E. coli 0157:H7

Why clean hides matter

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In the last few months there have been numerous recalls of beef and veal due to the potential presence of *Escherichia coli* (E. coli) 0157:H7. These recalls have affected nearly 100 further processors, butcher shops, and retailers.

Product recalls, triggered by suspected contamination of E. coli 0157:H7, can cost the industry millions of dollars. These recalls are expensive to packers, processors, and retailers, and costs are inevitably passed on to producers. In addition to direct costs, it is estimated that any food safety incident, whether real or perceived, that causes concern in consumers results in reduced prices and lost sales for three to six months or longer.

Meat contaminated with E. coli 0157:H7 may not look or smell spoiled but can still make people sick. This pathogen is dangerous to humans, especially those with an immature or weakened immune system, because it produces a toxin that can cause severe illness and even death. Cattle are the primary source of E. coli 0157:H7. Contamination of beef carcasses with E. coli 0157:H7 occurs during slaughtering and dressing procedures, especially de-hiding and evisceration.

To mitigate the risk of E. coli 0157:H7 contamination in provincially licensed abattoirs, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) implemented mandatory requirements for meat plant operators to implement microbial control interventions as of July 1, 2019, to control E. coli on beef and veal carcasses and enhance the production of safe beef and veal meat products for consumers.

A range of options for interventions were made available for meat plant operators to choose from, including hot water, acid rinses, and dry aging. However, these interventions only reduce the microbial load, they do not eradicate it. Even the highest standards of abattoir hygiene and use of interventions cannot guarantee to prevent contamination of the carcass and cross-contamination of nearby carcasses during dressing. Research results have shown that the dirtier the hide, the greater the potential for carcass contamination and the higher the risk to human health.

Mud and manure caked on calves isn't healthy for them nor for the consumer. Incoming calves with visible mud or contamination on the hide may have high levels of E. coli 0157:H7, therefore it is extremely important that the calves received at the abattoir are as clean as possible.

Mud Scoring System

1 = no tag, clean hide (0)
2 = small lumps of mud on hide in limited areas of the legs and underbelly (5.7)
3 = small and large lumps of mud in large areas of the legs, side and underbelly (12.8)
4 = small and large lumps of mud in even larger areas along the hindquarter, stomach and front shoulder (NA)
5 = lumps of manure on hide continuously on the underbelly and side of the animal from front to rear (23.2)
() is pounds of mud on animal

Credit - Ramsey & Allen, 1975

Mud and Manure Score 1

Mud and Manure Score 4

Photos credit Iowa State University Extension and Outreach

As recommended by the Verified Veal Program (VVP), '75 per cent of calves on-farm must have no more than 30 per cent of their abdomen covered in manure'.

Producing clean calves for slaughter can be a difficult task, as calf cleanliness can also be affected by diet, housing, calf health, weather conditions, and the cost of bedding materials. The VVP also recommends the following to keep calves sufficiently clean, including their flanks and legs:

1. Keep calves bedded (adjust your bedding needs accordingly to prevent calves from lying in manure)
2. Avoid overcrowding
3. Clip calves with long hair

In an effort to reduce the likelihood of contamination during the dressing and evisceration process, abattoir operators may implement a "mud/dust scoring system" that will help them to identify problem calves at receiving and allow for adjustment to the slaughter process to minimize or prevent contamination. This could include segregating the dirtier animals and processing them at the end, reducing the line speed so that employees can take more time to dress the carcass, adding more trimmers on the production line or using a hide-on carcass wash to remove excess organic matter and reduce airborne particles.

It is important that you work with your abattoir on pre-slaughter management practices aimed at reducing E. coli 0157:H7 load in your calves. Cleanliness of calves presented for slaughter contributes to the production of safe meat, minimizes the risk to human health, improves the shelf life of the meat, increases consumer confidence, and protects industry's reputation and investment.