FOOD SAFETY SUPPORT

Alberta Agriculture and Food has a team of food safety specialists available to assist you to assess and improve your food safety programs.

www.agriculture.alberta.ca/aha

Contact 780-427-4054
or toll free 310-0000.

Improving food safety programs is a good business decision as doing so can enhance food safety, quality and consumer confidence; reduce waste and recalls; and open doors to additional markets.

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The study results demonstrate that boot disinfection does indeed assist in significantly reducing the mechanical transmission of microorganisms on footwear to and from the kill floor.

- For aerobic plate count, there was more than a log reduction (greater than 10 times) in the microbial counts after the boot bath was used.
- For coliforms and generic *E. coli*, the effectiveness of disinfection was assessed comparing the proportion of positive samples for both types of bacteria before and after the boot bath. For coliforms, the percentage of positive samples went from 54.2 percent (before boot bath) to 25 percent (after boot bath) and for *E. coli*, from 18.8 percent (before boot bath) to 4.2 percent (after boot bath).

These results are illustrated in the following charts:

Figure 1: Percentage of coliform positive samples before and after boot bath use

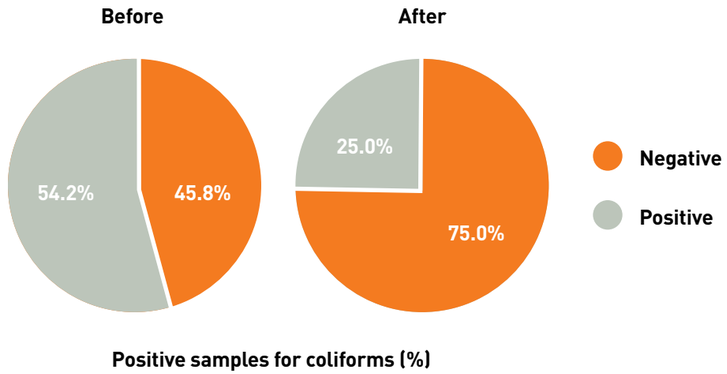
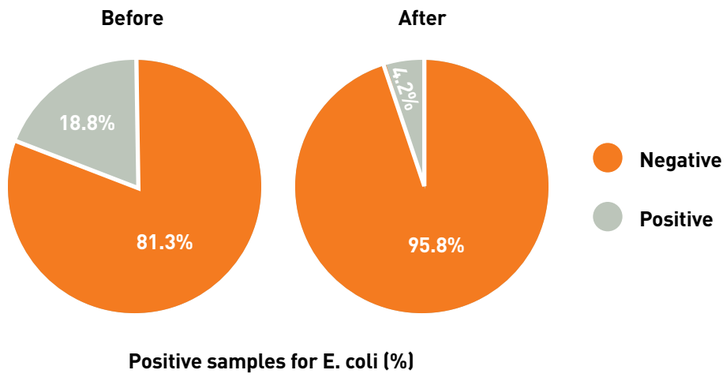


Figure 2: Percentage of generic *E. coli* positive samples before and after boot bath use



Food Safety Sentinel is now available on-line by visiting the Alberta HACCP Advantage (AHA) website at www.agriculture.alberta.ca/aha and clicking on the link to the Food Safety Sentinel newsletter.

References

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FOOD SAFETY SENTINEL

January 2009

IN THIS ISSUE

EFFECTIVE HYGIENIC TOOLS TO REDUCE CONTAMINATION IN MEAT PLANTS

One of the most important roles of a meat processor is to ensure that meat and meat products remain free from contamination during production. Facility employees are a major potential source of contamination. Workers can spread food hazards from one area to another because they frequently move throughout the facility. For this reason, people working in direct contact with food, food contact surfaces or food packaging materials must follow proper hygienic and food safety practices while on the job. These include, but are not limited to:

- Clean and suitable clothing;
- Hair coverings (head and/or beard);
- Sanitized hands;
- The proper use of gloves;
- The use of knife sterilizers; and
- Boot baths to assist in bacteria reduction.

Clothing

Even though many people wear very clean clothes to work, there is no guarantee that street clothes are clean enough to prevent product contamination. For this reason, street clothing must be covered with suitable protective clothing. All work clothing must be clean (properly washed and maintained) prior to the start of operations. Workers should not launder their own protective clothing at home because it is not possible to monitor how well the clothing was cleaned. Laundry services must be provided so that the facility operator can monitor proper cleaning. Managers may consider using a laundry service that will clean, sanitize and deliver clean uniforms directly to the facility.

Work clothing should have snaps for closure rather than buttons. Buttons can fall off, creating a physical hazard in the products produced. When smocks have become excessively soiled they must be replaced with clean smocks. Clothing that becomes torn or shredded should be removed from circulation to prevent fraying threads from entering product. Clothing should not have any pockets above waist level, to ensure that items commonly stored there, such as pens or small tools, do not fall out into product. Any pocket above the waist should be either sewn shut or removed. Work clothing should not be worn or stored in areas outside of the facility, in washrooms, lunchrooms or inside lockers used for street clothing.

Best industry practices suggest that durable, neat-fitting clothing be worn, as loose-fitting clothing is more dangerous around moving equipment and machinery. The use of coveralls is not encouraged in food processing areas because coveralls are difficult to put on and remove, making them less sanitary than a two-piece uniform. The biggest concern is that when a worker uses the washroom, the upper half of the coveralls is likely to come into contact with the floor.

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HAND SANITIZING

Hand washing is the most important means of preventing the spread of infection. Traditional hand washing with soap (listed in the CFIA reference database) and water is by far the most effective way to control bacteria. Hand sanitizers should be used only as a supplement, not a substitute to proper hand washing.

Many food-processing facilities have workers use alcohol hand sanitizers upon entering processing areas. Alcohol-based gels and "no water" hand sanitizers may take less time to use than traditional soaps, and they can help to reduce some of the surface bacteria found on hands. However, sanitizers do not destroy all the bacteria on hands unless they have been properly washed with soap first. Therefore, hand sanitizers cannot be relied upon as the ONLY method of hand cleaning within the facility.

The use of colour-coded clothing for different jobs or areas within the facility helps provide a visual differentiation of employees in the plant. Darker colours should be discouraged, as dirt is not always visible when dark clothing is soiled.

Many facilities have adopted the use of aprons and plastic sleeves. These, too, must be maintained in a clean and sanitary condition during production, and should be changed frequently or when they become soiled. If disposable aprons are used, they should be used only once and then disposed of. If they are reusable, they must be washed, sanitized and dried at the end of the shift. All waterproof clothing should be washed frequently during operations and prior to exiting and re-entering the kill floor.

Gloves

The use of gloves for facility personnel handling food is a hot topic of debate. It is recommended that any individuals who handle food products wear gloves to add an extra barrier of protection between clean, sanitized hands and the food product. However, gloves may lend a false sense of security to those who wear them; employees may assume that their hands are safe for the food, but if the gloves become contaminated or torn, they are no longer effective.

Workers must wash and sanitize their hands as usual before putting on gloves. Gloves should also be washed and sanitized.

Rubber/latex gloves should be changed when torn, damaged or when potential contaminates are handled. If single-use gloves are used, they must not be reused. Covering cloth gloves with a latex or rubber glove is a practice that is highly recommended by industry. Cloth gloves may be worn but they tend to soil quickly and can subsequently contaminate product. Cloth gloves without coverings should be changed frequently to prevent excessive soiling. Uncovered cloth gloves may be permitted in boning and cutting where safety is a determining factor. But use should be kept to a minimum. Only disposable gloves, not cloth gloves, should be used to handle ready-to-eat (RTE) meat products.

With the exception of metal mesh gloves, protective gloves should be covered with an impervious material (e.g., rubber) to help prevent buildup of debris in the cracks and crevices of the glove. Whatever type of glove is chosen by the facility, it is management's job to ensure that all employees understand how to properly use the gloves provided.

Knife Sanitizers

Boiling water is a common and practical method of knife sanitizing. It is important to note, however, that boiling water does not kill all bacteria, just most of them. Some bacteria are actually resistant to the temperature of boiling water (100°C). To kill all bacteria present, it is necessary to raise the temperature of the boiling water above 100°C. To accomplish that, the water must be heated under pressurized conditions (e.g., using a pressure cooker or autoclave).

It is recommended that the sanitation of knives and utensils during processing operations be done using a cabinet containing water that is held at 82°C (180°F) or greater. Using heat to kill bacteria to sanitize a knife involves a time/temperature relationship. The longer the time of contact between the knife and the water, the greater the chance of destroying bacteria. Studies have shown that the knife is properly sanitized if it is left in the water for at least two minutes. In order for knives to spend sufficient time in the water at 82°C a worker should use two knives. Each time a knife becomes contaminated, it is washed and placed in the knife sanitizer and the other knife is used. The temperature of the sanitizer should be maintained throughout processing, and the water should be replaced if it becomes dirty. Water levels must cover the blade/handle junction (to destroy bacteria that may be harbored there), and the knife must be visibly clean before being placed in the sanitizer. If the knife is not washed first, blood or dirt may harden on the blade. A warm-water rinse followed by a dip in a sanitizer will greatly reduce the level of contamination.

Knife sanitizers should be located on the kill floor where they are easily accessible, and checked each day prior to the start of operations to ensure that the equipment is functioning properly. They can also be used on cutting floors to sanitize knives that become contaminated when dropped on the floor, or when cutting into abscesses or other contaminated material.

Boot Baths

Dirty footwear can be quite hazardous because it enables contaminants like dirt and bacteria to be transferred from one area of the facility to another. Facility personnel should make certain that their footwear is kept clean at all times and is washed before leaving dirty areas such as the kill floor. Footwear should be kept specifically for working at the meat facility and be suitable for the facility/job. Footwear should be:

- Waterproof (if working on the kill floor);
- Steel toed for safety;
- Non-slip; and
- Capable of being cleaned and placed in footbaths.

Boot baths, if used correctly, can assist in reducing the bacterial load on footwear. They should be located at entrance/exit areas of different parts of the facility (e.g., between kill floor and cut floor, or between kill floor and barn). Boots should be dipped into a bath containing an approved sanitizer solution when moving from a dirty area to a clean area. The ideal footbath should be easy to use, easy to maintain and clean, large enough for workers to step through and located in areas of high traffic.

The selection of a sanitizer depends on many factors such as the hardness of the water, the effectiveness of the sanitizer under site conditions and the cost. Sanitizers used for footbaths must be listed on the CFIA reference database. A list of approved sanitizers can be found at: http://active.inspection.gc.ca/scripts/fssa/reference/reference.asp?lang=e. Facilities should request technical advice on using chemicals from the chemical supplier.

Sanitizers are less effective when food particles or dirt are present on the footwear. So it is important to remove as much debris as possible before stepping into the footbath. This is because organic matter (from the bottom of the footwear) reacts with the sanitizer, leaving less available sanitizer in the solution (large amounts of organic matter will reduce the germicidal activity of a sanitizer.)

Most sanitizers are unstable, highly reactive compounds and must be handled with caution. Sanitation personnel should wear protective equipment and clothing when handling chemicals. Safety information on specific products is available from product labels, product technical sheets and material safety data sheets (MSDS). The plant operator should keep a current list of the chemicals used in the footbath, where they are stored, how they are mixed (according to manufacturer's instructions) and have the MSDS sheets and approval documentation on file.

Boot Bath Study Results

The Food Safety Division of Alberta Agriculture and Rural Development recently conducted a study to validate the effectiveness of boot baths placed outside kill floors in provincially licensed abattoirs. The study was done specifically to determine whether boot-bath disinfection assists in reducing the mechanical transmission of microorganisms on footwear of personnel.

Samples were collected from eight provincially licensed abattoirs in Alberta. The sample collection consisted of swabbing the footwear, specifically the soles (excluding the heel) of boots worn by personnel before and after stepping through the bath upon entering and exiting the kill floor. A one percent solution of Virkon®S was used as sanitizer. Forty-eight pairs of footware were sampled (96 swabs) and three types of bacteria were enumerated—aerobic bacteria, coliform bacteria and generic *E. coli*.

HAIR/BEARD COVERS

All facility personnel (including employees, visitors and contractors in or near areas where meat or meat products are handled, processed or packaged) should wear a clean hair covering. The best type of hair cover is the closed cover, not the mesh net. The closed cover ensures that hair will not get out between the strands, and also makes it easier to visually notice that the person is wearing the hair net. A clean hair net should be worn in a manner so as to contain all the hair. In addition, any workers with facial hair (e.g., beard, goatee, mustache) should wear a beard net.

Hair and facial hair must be kept clean and neatly trimmed for sanitary reasons. A clean beard net should be worn in a manner that confines all facial hair. A small mustache (e.g., covering the upper lip area only) may not require a cover. Facial hair in excess of the upper lip area should be covered with a beard net. Sideburns that extend beyond the lobe of the ear should also be covered with a beard guard. Hairnets and beard covers should not be worn outside the facility.