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.

Alberta

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- **Ventilation and Air Flow:** Properly designed ventilation systems prevent airborne contaminants from being transferred from one area of a production facility to another and prevent excessive heat, humidity and condensation. Positive air pressure in "clean" or microbiologically sensitive areas of your plant such as 'Ready to Eat' and 'Packaging' rooms will prevent the air flow from " less clean" areas (e.g., kill floor). Intake of outside air directly to exposed meat product handling rooms should be filtered with 30% efficient at 2 microns to maximize food safety. Ventilation systems can be adjusted to prevent condensation from forming.
- **Sanitation Facilities:** One of the best ways to control hazards in a food-processing facility is through proper sanitation and cleaning of hands, equipment and premises. Ensure appropriate hand washing stations are available and accessible. Construct these from corrosion-resistant materials for easy cleaning. It's also important to have potable water available at a temperature suitable for the cleaning method and chemicals used.

Establish an Equipment Program

- A recent European study found that 25 per cent of all food contamination was due to improperly used or poorly designed machinery.
- A good equipment program ensures that all equipment used in your facility is designed, constructed, arranged, operated and maintained to prevent contamination of your food products.
- An effective equipment program includes:
  - New Equipment Purchasing Guidelines – a set of criteria that ensures equipment is meeting regulatory requirements and food safety guidelines.
  - Preventive Maintenance Program – can help to save money by decreasing equipment breakdowns. The program ensures that equipment and devices that may impact food safety or the stunning of food animals are functioning as intended.
  - Calibration Program – ensures that measuring tools and devices (e.g., thermometers, water activity meters, scales, pH meters) that may impact food safety are working correctly.
  - List of Lubricants and Non-food Maintenance Chemicals – Chemicals that are used on equipment that may come into contact with food or food contact surfaces must be approved. The listing and approval numbers for these lubricants and chemicals can be found on the CFIA website at www.inspection.gc.ca. Look for the "Reference Listing of Accepted Construction, Packaging Materials, and Non-Food Chemicals Agents."

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FOOD SAFETY SENTINEL

September 2007

IN THIS ISSUE

CONSTRUCTION & FOOD SAFETY

Build for Success

As food processors, we are always adapting to changes in the market. This can mean dealing with new equipment and new facilities. You may expand your plant to meet demand for your products or create new product lines and explore new markets.

Food safety keeps our industry strong and ensures that consumers have confidence that the food we produce is safe. Establishing a sanitary processing facility is key to successful food safety. Whether building a new processing plant or an addition, or changing an existing facility, sanitary plant design is extremely important when it comes to establishing and maintaining the safety of your food products.

This issue of the Food Safety Sentinel provides some helpful tips and food safety considerations when expanding or constructing processing plants and choosing new equipment.

Potential Food Safety Hazards

Controlling possible food safety hazards is key when designing a sanitary processing facility. There are four main types of hazards in food processing:

- **Chemical hazards:** e.g., lubricants or cleaning chemicals that get caught in equipment or elsewhere in the plant.
- **Physical hazards:** e.g., loose nuts and bolts or metal-on-metal rubbing that creates metal fragments.
- **Microbial hazards:** e.g., contaminants that get caught in blind corners or other difficult-to-clean areas.
- **Allergen hazards:** e.g., inadequate control of food containing allergens.

Location, Location, Location

The location of the plant, the exterior environment and the exterior design all play a role in food safety.

- Check out the neighbourhood. It is best not to locate your facility near oil refineries, landfills, paper mills or chemical plants. These types of high-risk facilities may create smoke, dust, sewage or odours that could impact the safety of your products.

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CHOOSE THE RIGHT EQUIPMENT

You may want to consider what risks a particular piece of equipment might add or remove from the production process before buying it. Here are a few things to consider:

- Food-contact surfaces should be constructed from a suitable food-grade material that is smooth, non-corrosive, non-toxic and non-absorbent.
- The equipment's design and maintenance program should reduce, as much as possible, the risk of food contamination. Watch for areas where nuts and bolts could loosen and enter the production stream or where metal grinding on metal could create shavings or metal chips.
- Chemicals, such as lubricants and seals, should be made from the right food-grade materials and not over-used.
- Equipment should be easy to clean. Watch for cracks, crevices, hollow areas or other 'hang-up' points that could collect bacteria, food particles, moisture, and chemical or allergen residues.
- All areas of the equipment should be accessible for cleaning, sanitizing, maintenance and inspection.
- Failure of any component or part of the equipment should not create or risk possible contamination.
- Design and maintenance of the equipment should reduce, as much as possible, the chances of product contamination from dust, condensation or similar sources.

(continued from front cover)

- Locate your building at the highest elevation possible on the site so that storm water will drain away from the building. This will help to eliminate pooled water, which can be a perfect breeding ground for insects. Moisture also creates an ideal environment for microbial and mould growth. Airborne spores from this growth could enter your plant.
- Proper maintenance of your land and properly graded, compacted, dust-proofed and drained roads will help to control possible sources of contamination (rodents, insects, birds, odour, moisture). A minimum 18-40 inch vegetation-free zone around the building is recommended. Use pea gravel, asphalt or concrete to control plant growth.
- Eliminate unprotected openings where contaminants and pests could enter. Air intakes should be properly located and screened, and the roof, walls and foundation should be built well and maintained to prevent leakage. Make sure that all doors and windows are tight fitting and screens are provided on all windows that can be opened.
- Seal potential entry points such as cracks around door frames, under doors, water and utility hookups, vents and holes.
- Clean up any possible nesting areas, such as loosely piled building materials, old feedbags or anything else rodents and birds can live or hide in. Block bird nesting sites around the building.
- Control water sources such as leaky taps, sweating pipes, open drains and open water containers.
- If you consider drilling a well or are maintaining an existing one, keep in mind that most contaminants enter the well through the top or around the casing. Sewage and other contaminants may also make their way into the ground water. It is important that the well is accessible for maintenance, that the ground is sloped away from the well, and that the well is located as far as possible from potential contamination sources such as septic lines, barns or surface water.
- Some modern Shipping and Receiving areas have seals that prevent entry of pests and dust into the plant when a truck is backed up to the door. If seals are not used, measures should be taken to minimize pests and dust going into the plant during product loading and unloading.

What's on the Inside?

Consider the design of floors, walls, ceilings, equipment and ventilation systems. Exposed fibreglass insulation, unprotected glass (e.g., skylights, light fixtures), flaking paint or rust directly over open production areas may cause contamination by foreign matter. Surfaces that are not easily cleaned and sanitized can be sources of microbial contamination. Analyze your plant environment with the following considerations:

- **Plant layout:** Poor process and product flow is a common problem for older buildings that have been built over time. Modern facilities should be designed to facilitate hygienic operations from the arrival of raw material to shipping of the finished product. Design product flow charts and equipment process flow plans before committing to any construction or renovation. Physical barriers can be used to separate various processes to improve food safety. For older constructions where physical separation of "clean" and "less clean" processes is not possible, consider strict processes and procedures to help avoid cross-contamination.
- **Floors:** Pitted floors can easily harbour microbes that can be splashed onto clean equipment during sanitation or tracked throughout the plant on footwear. Smooth, non-absorbent, sturdy, easy-to-clean floor surfaces work best. Cover and seal floor joints to prevent contamination and make cleaning easier.
- **Walls:** Walls that are smooth and non-absorbent help prevent microbial growth and absorption of materials containing dust and allergens. The finish should extend from floor to ceiling and be easily cleaned. Don't forget to include anything that is hung on walls in your scheduled maintenance, cleaning and sanitation programs.
- **Ceilings:** Ceilings in production areas should be designed to prevent contaminants like dust, condensation and paint chips from falling from the roof supports or from the underside of the roof into the food-production area or onto finished product. Try to avoid false ceilings because they are an ideal place for insects to live and are often difficult to clean.
- **Lighting:** Intense, well-distributed and good-quality lighting is important for ensuring food safety and proper sanitation. Proper lighting prevents errors during inspection and processing. Light intensity is different depending on the work area. Inspection stations require the most light intensity and it can be measured using a light meter. Try to use safe fixtures that do not leak, corrode, or cause fires or electrical problems. Protect bulbs so that if they break, glass and other material won't affect the production area. Conceal electrical lines within the building structure or encase them in a sealed containment. Caulk electrical lines that pass through exterior walls to prevent rodents from entering your facility.
- **Draining and Sewage:** Pooled water can be a breeding ground for bacteria and a gathering place for contaminants. It also poses a hazard for food production workers. For most kinds of processing establishments, floors should have sufficient slope to permit liquids to drain toward outlets with properly installed and approved traps and vents. Floor drains with a deep seal trap and suitable plumbing can help to prevent sewer back-up and floor flooding. Regular inspection and cleaning of drains is important, so consider fitting all drains with easily removable grates or covers. Separate production drainage lines from sewage disposal lines and ensure that sewage lines do not pass over or through production areas. It is also a good idea to install backflow-prevention devices in the sewage disposal system.