

MEAT SANITATION PAYS

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A meat sanitation management program pays. A Missouri study revealed that it may double shelf life and reduce rewraps by at least 50 percent. A New Mexico study showed that with an investment of 40 cents per week, savings of nearly \$9.64 for one product (cube steak), alone, was realized. New Jersey researchers indicated that a meat sanitation program demonstrated a net savings of \$169 per week for one store.

How can you accomplish this? Purpose of this fact sheet is to help you answer that question. Specific topics discussed are:

- Meat discoloration from microbes
- Controlling microbial growth
- Developing a sanitation management program

Meat Discoloration from Microbes

The major factor contributing to reduced shelf life of meat products is bacterial contamination. This type of bacteria grows and reproduces readily at refrigeration temperatures.

The color variations in packaged meat products are a change in myoglobin which gives meat its color. When exposed to air, oxygen is taken up to form oxymyoglobin. This produces the attractive, bright, cherry red color desirable in beef cuts. It is achieved when meat has been permitted to "bloom." Prolonged exposure to air, inadequate refrigeration and bacterial growth in abundant numbers cause this color to change to a reduced myoglobin form (metmyoglobin) which is brownish. Figure 1 shows how this process results in color change. This may result from surface dehydration

or microbial populations in such numbers that they deplete all oxygen in the package as well as from the surrounding oxymyoglobin, causing dark color or brown spots (metmyoglobin).

Controlling Bacteria Through a Sanitation Management Program

It is essential that a sanitation management program involve thorough scrubbing with commercial detergent and using a recommended sanitizer. Hot water or steam, alone, will not remove soil or eliminate bacterial contamination.

Inadequate refrigeration temperature is a major contributor to increased microbial growth. Major types of microbes in the meat market are those that grow at refrigerated temperatures (psychrotrophs). Maintaining adequate refrigeration will not completely prevent microbial multiplication, but will retard it greatly. Never use refrigeration in lieu of a good sanitation program. Figure 2 illustrates this relationship. For example, meat cuts with only 100 microorganisms per square inch would have 800 per square inch in 2½ days at 32 degrees F, while temperature of 40 degrees F for 2½ days would result in a population of approximately 50,000 organisms per square inch. Therefore, it is imperative that case and cooler temperatures be maintained at or very near 32 degrees F. Move meat from cooler to case as rapidly as possible, especially if the cutting room is not refrigerated.

Outline regularly scheduled equipment and facility cleaning program to all employees and strictly adhere to it.

Use of sawdust on cutting floors is discouraged. If slippery floors are a problem, use salt to improve traction unless prohibited by law.

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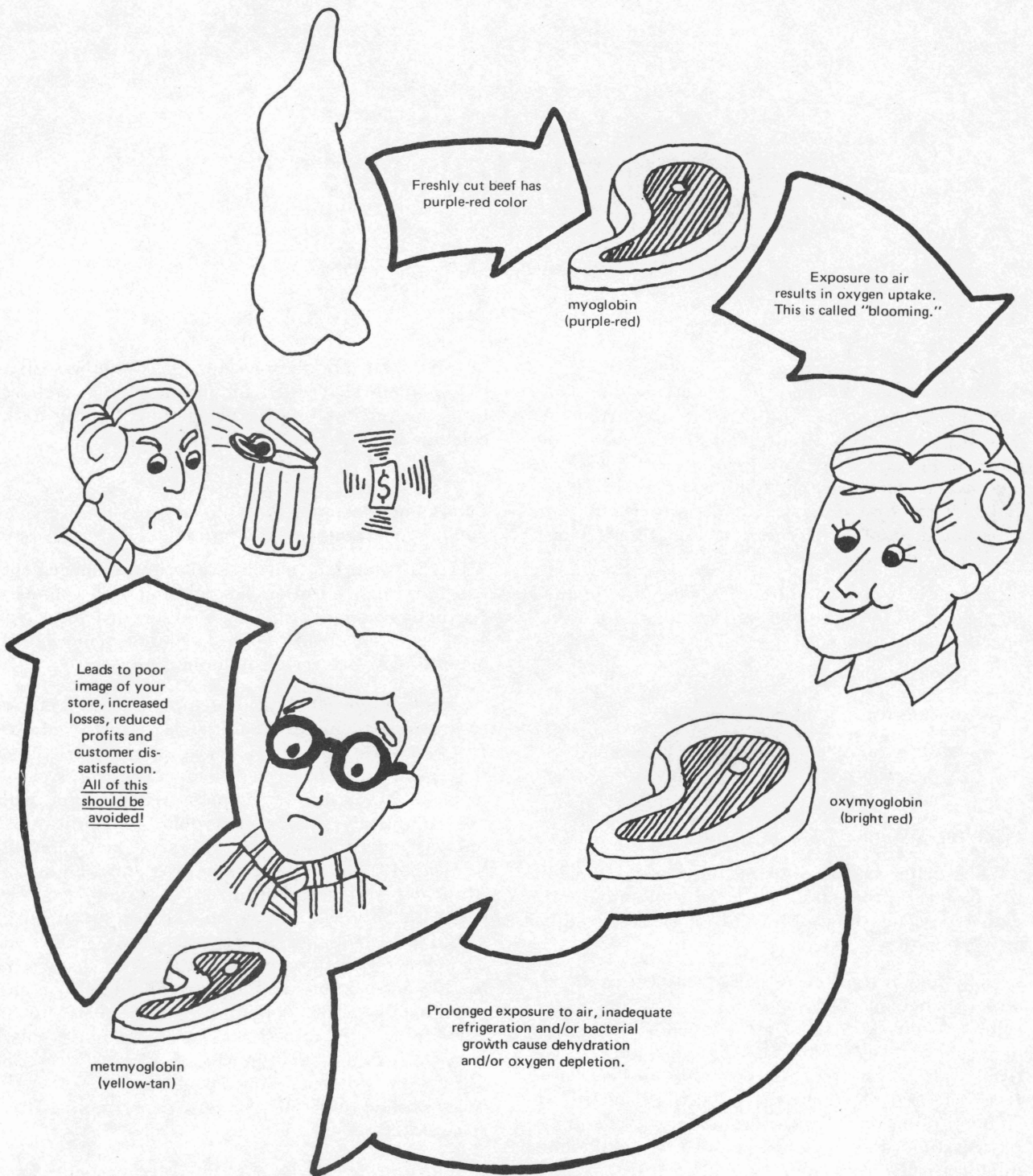


Fig. 1. Effect of bacteria on meat color.

In developing a sanitation management program, establish guidelines for personnel, cooler and processing room, equipment and display areas. Set up guides for temperature management and product handling and enforce them rigidly. Incorporate the following guides into the operating policies of the retail meats department.

Guide No. 1: Personnel — A Guide to Meats Sanitation Management

General suggestions

Expect employees to comply with established personal hygiene standards. People are major contaminants of meats products. By using practical, common sense guidelines, contamination by personnel can be reduced to acceptable levels.

Prohibit non-meats department personnel from entering the department. Likewise, require meats department personnel to follow established cleansing and sanitizing practices as indicated below whenever entering the department.

Specific suggestions

- Change frocks, aprons and gloves daily, or

more frequently, if they become extremely soiled.

- All employees whose hands come in contact with the cut surface of the meat should wear plastic gloves which are to be changed and discarded each time the employee leaves the meat processing area. Gloves cost approximately 1 cent per pair and are an inexpensive means of prolonging shelf life.
- All personnel, including management and inspectors, should wear some type of head and beard cover when in the market area such as caps or hair nets.
- Prohibit smoking, chewing tobacco or dipping snuff in the meat processing area.
- Require personnel to wash hands thoroughly with soap twice and rinse in a sanitizer solution each time one enters the meat processing area.
- Do not permit anyone having boils or open infections in the meat processing area.
- Prohibit spitting on floor.
- Do not sneeze or cough on meat products.

Guide No. 2: Market Facilities and Equipment — A Guide to Meat Sanitation Management

Item or Area	Cleaning and Sanitizing Procedures	Frequency
Holding cooler and processing room walls	Use the same procedure on the cooler floors and walls as recommended for the processing room floor. Brush rails while detergent is on them.	Weekly
Processing room floor	<ol style="list-style-type: none"> 1. Rinse with hot water (140 degrees F or greater) 2. Apply an alkaline detergent and let stand for 10 minutes, then scrub with brush or broom. 3. Hose off with hot water 4. Apply sanitizer; let stand for recommended time (usually 10 minutes), remove excess water and let dry. 	Daily
Power equipment—saws, grinders, cutlet machines, etc.	<ol style="list-style-type: none"> 1. Disassemble all equipment as much as possible 2. Rinse with hot water (140 degrees F or greater) 3. Apply an alkaline detergent and let soak 4. Rinse with hot water 5. Apply sanitizer and let stand for 10 minutes 6. Rinse with potable water 7. Allow to dry 8. Apply thin film of edible technical oil, which should be removed before using equipment again 	Daily or twice daily if equipment becomes extremely soiled
Hand tools—knives, hand saws, metal trays, etc.	<ol style="list-style-type: none"> 1. Rinse with hot water (140 degrees F or greater) 2. Wash with alkaline solution 3. Rinse with hot water 4. Apply sanitizer 5. Rinse with potable water 6. Apply thin film of edible technical oil, which should be removed before using equipment again 	Twice daily; more often if needed Wash and sanitize any equipment dropped on the floor
Cutting "boards," tables and blocks	<p>Wooden cutting surfaces are to be avoided</p> <ol style="list-style-type: none"> 1. Rinse with hot water (140 degrees F or greater) 2. Apply alkaline detergent solution 3. Scrub thoroughly 4. Rinse thoroughly with hot water (140 degrees F or greater) 5. Apply sanitizer and let dry 	Daily
Display cases	<ol style="list-style-type: none"> 1. Clean display cases with an alkaline detergent solution and rinse 2. Remove and clean shelves as recommended for hand tools 	Daily Weekly

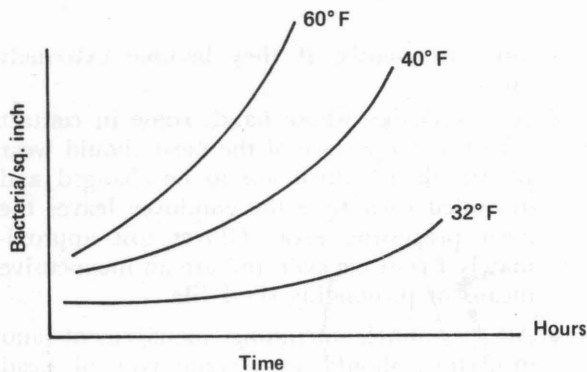


Fig. 2. Effect of temperature on microbial growth on meat.

Guide No. 3: A Guide for Temperature Management and Product Handling

- Move meat rapidly from truck to cooler.
- Avoid stacking and overloading in cooler space. Generally, 3½ square feet of cooler space per foot of linear display space is recommended.
- Remove fresh meats from boxes and place on cooler storage racks so that cold air can circulate around them.
- Plan your work so that the meat remains in the cutting room for a minimum of time. Use 20 minutes or less as a goal.
- Except during entry and exit, keep cooler door closed tightly.
- Move meat products from cooler to display case as rapidly as possible.
- Remove all meats from display case and hold in cooler over weekends.
- Check temperatures at least twice daily for proper levels and install two recording thermometers if possible.
- Set defrost cycles for times when the store is not open for business.
- Avoid frost build-up on equipment and keep all cold air passages free from obstructions.
- Do not permit meat to sit in the cutting room during the employee's breaks and lunch periods.
- Do not stack prepackaged meat immediately after packaging—the heat sealing process will raise the temperature of the meat and hasten discoloration.
- Never stack meat or primal cuts in push carts for storing in the cooler.
- Do not reduce air flow by overloading meat hooks or hanging meat so that it rests against the wall of the cooler.
- Never display canned hams above the chill line of frozen cases or stack them in the aisles where there is no refrigeration.

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