

# Safe Dry Goods Storage

by *Melissa Vaccaro, MS, CHO*

**N**ot too long ago a consumer brought an open pouch of hot chocolate into our office for testing. She claimed there were ‘worms’ in it. Upon inspection, we confirmed that the beverage mix did contain pests—Cabinet Beetles, not worms. This made me wonder how much we pay attention to the storage of our foods, not only at home but also in our foodservice facilities.

As an inspector, I can tell you that dry storage areas are inspected. But not being a high priority or a significant risk factor, they are often given a superficial once over.

Unfortunately, this seemingly simple area of a facility could inadvertently create a very large risk factor—an infestation of pests throughout the entire foodservice operation.

In reviewing regulations and literature on dry storage of foods, there is a limited amount of very specific regulation. The FDA Food Code requires that food be stored six inches off the floor, that food be protected during storage, and that there be no pests in the facility to contaminate food. These rules, however, are very general.



SAFE FOOD  
STORAGE  
GUIDELINES  
FOR YOUR  
FACILITY

The Current Good Manufacturing Practice (cGMP) under the Code of Federal Regulation, 21 CFR 110, provides minimal language regarding food storage of finished products and required protection against contamination, deterioration, and adulteration. Again, very non-specific language leaves this part of the regulation vulnerable to a broad array of interpretations. Generally, sanitarians will declare that all is well in the dry storage areas with regards to food safety if food is off the floor, they see no signs of pests, and the food is protected and not

being contaminated in any way. Sanitarians are not so much concerned about quality as safety; however, for foodservice managers, directors and owners, food quality also plays an important role in their facilities.

Exploring the Internet, I have concluded that several good practices can be put into place to not only provide food safety, but keep quality top notch as well.

### DRY STORAGE SIZE GUIDELINES

Believe it or not, someone actually came up with a formula for dry storage space. The FDA and the Conference for Food Protection's Food Establishment Plan Review Guide has done great work in providing graphs and tables to complete the necessary space and storage calculations. To get started on either a new design or revamping an existing facility to meet today's needs, review Section III of the Food Establishment Guide for Design, Installation, and Construction Recommendations: Part 7, Dry Good Storage.

#### Overall Storage Area:

The storage space of a food facility is determined by the menu, number of meals served, quantities of food purchased, and the frequency of delivery. The Plan Review Guide advises that food facilities use the following formula to estimate required storage space:

**Required Storage Area (sq ft) = (Volume per meal × Number of meals between deliveries) ÷ (Average Height × Fraction of usable storeroom floor area)**

#### Where:

- Volume per meal = .025 to .050 cu. ft. per meal served
- Useful storeroom height = 4 to 7 feet
- Storage time between deliveries = 3 to 14 days
- Fraction of useable storeroom floor area = .3 to .6

**Example: If 100 meals per day are served and there is 10 day storage between deliveries, how much storage space would you need?**

100 meals x 10 days = 1000 meals must be provided for in storage

$(.05 \text{ cubic feet} \times 1000 \text{ meals}) \div (5 \text{ feet} \times .3) = 33$   
**square feet of storage area would be required**

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### Estimating Shelving Needs:

The guide suggests that shelving can be constructed of suitably finished hard wood, durable plastic, or preferably of corrosion-resistant metal. It recommends:

- The highest shelf for practical use should be 7 feet.
- The lowest shelf should be 6 inches from the floor.
- Clearance between the shelves should be at least 15 inches.

To calculate the total shelving needed, apply the following formula:

$$\text{Linear feet of shelving for storage (ft.)} = (\text{Volume per meal} \times \text{Number of meals between deliveries}) \div \text{by } D \times H \times C$$

Where:

D = Depth of the shelves in feet

H = Clearance between shelves in feet

C = 80 percent effective capacity of shelf height

This guideline provides an abundance of information on facility planning and can be downloaded at: <http://www.fda.gov/food/guidanceregulation/retailfoodprotection/industryandregulatoryassistanceandtrainingresources/ucm101639.htm>

### PEST CONTROL AND MONITORING



To control pests, keep them out of your facility.

- Storerooms, doors, and windows should be rodent and pest proof. They must be kept closed and sealed tightly to the building. If not closed, they should be screened with 16 mesh to 1-inch screening or smaller.

- Openings must be sealed and structural cracks and crevices must be repaired. If you can see light coming in through a crack, crevice or door frame, the bugs and rodents can get in.
- The outside of the facility should be kept free of high weeds and plants, trash, and idle equipment that could provide harborage for pests.
- Monitoring devices should be in place such as live traps, glue boards, pheromone detectors, light traps, or similar. Check with your regulatory agency to determine what items are allowed and what items cannot be used.
- If you find pests or evidence of them, contact a pest control company. Don't wait!

### FOOD PLACEMENT WITHIN THE STORAGE AREA



How do you arrange shelving and foods in the storage area? It is recommended that foodservice facilities:

- Avoid storing foods in direct sunlight. This could affect quality as well as nutritional value.
- Store all food at least 6 inches off the floor to avoid contamination and allow for cleaning.
- Store all food at least 18 inches away from the outer walls. This will help with monitoring, cleaning, condensation, and wall temperatures affecting foods.
- Have a 2 ft. ceiling clearance.
- Have a re-work or damaged product area that is segregated from usable foods and labeled as such.
- Do not store chemicals in the same storage area as food if at all possible. If you must, be sure they are completely segregated from foods or single service items such as take-out containers.

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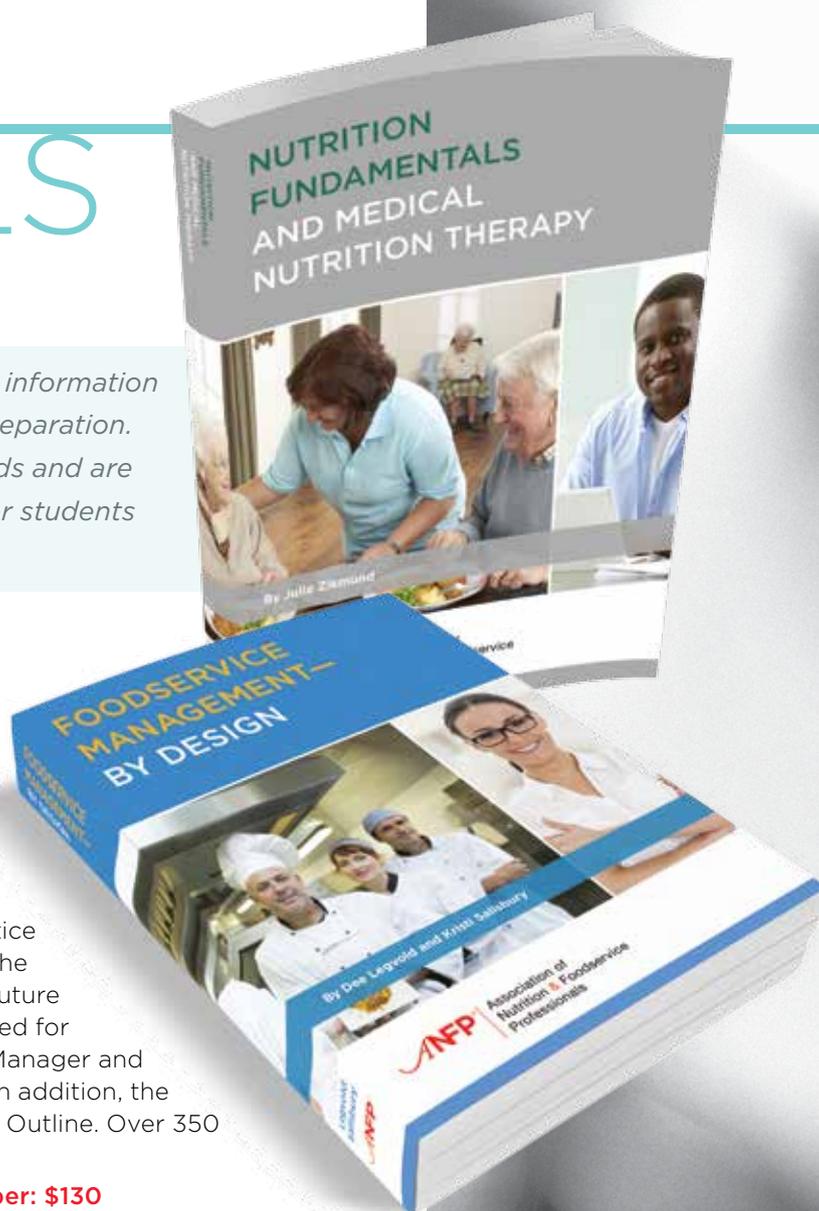
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## TEMPERATURE AND HUMIDITY



*The ideal storage room temp. is between 50°F and 70°F.*

According to many experts, storerooms should be kept cool, dry, and well ventilated. The ideal storage room temperature is between 50°F and 70°F, with cooler being better, but not freezing of course. Cooler storage will allow you to store many foods longer. Good ventilation will permit air movement, which is essential in storage rooms.

Many suggest that a storage area should have a humidity level of 15 percent or less. You may need to provide air conditioning, dehumidification, or heat to maintain this level. Moisture could degrade some food packaging and will encourage mold and mildew issues in the storage room.

## FOOD ROTATION



*Keep older food at the front of shelving to be used first.*

First in, First Out (FIFO) is not typically a regulatory requirement in most jurisdictions, but it is a very good food quality practice. Date your foods when they arrive. Keep older food at the front of shelving to be used first. Train employees not to take items from the back of the shelves. Upon delivery, place new items to the rear of

the shelving units. Although use-by and sell-by dates are typically for quality purposes, you can use them as a guide to FIFO. The practice of FIFO often goes out the door when we are busy, so monitor shelving units regularly.

## MAINTENANCE AND REPAIR



*Clean up food spills immediately to prevent bacteria from growing.*

Keep your storage areas clean, organized, and in good repair. Organized storage rooms will reduce the amount of time employees spend looking for an item. Clean up food spills immediately to avoid any chance bacteria may begin to grow.

Despite the fact that regulations are relatively absent on what ideal dry storage should encompass, it remains a good practice to properly maintain your storage units to avoid nasty pests, rodents, or degradation of food quality. Monitor your storage rooms on a regular schedule to prevent problems that may become a regulatory or food safety issue. If you find a pest or signs a pest may be present (webbing in food, gnawed boxes, rodent droppings, small holes in packaging, dead pests, and similar), contact a professional pest control company immediately. In an upcoming issue we will discuss common storage pests. **E**



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