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### Safe Aid: A food safety training manual for food banks

Vickie R. Willis

*The University of Montana*

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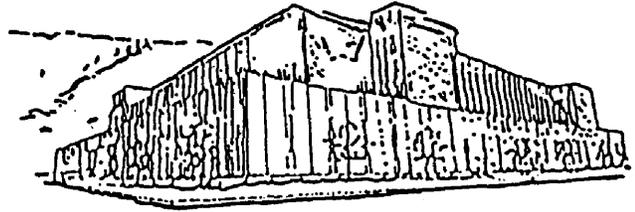
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*Safe Aid:*

**A Food Safety Training Manual for Food Banks**

by

**Vickie R. Willis**

**B.S. Oklahoma Baptist University, 1986**

**presented in partial fulfillment of the requirements**

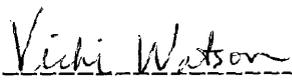
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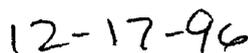
**The University of Montana**

**1996**

**Approved by:**

  
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**Chairperson**

  
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**Dean, Graduate School**

  
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**Date**

*Safe Aid*: A Food Safety Training Manual for Food Banks, a project commissioned by the Montana State University Extension Service (9 pp. introduction + 168 pp. training manual)

Committee Chair: Vicki Watson 

Various national agencies estimate between six and thirty million cases of food-borne illness occur in the United States each year. Food-borne illness is a serious, if undocumented, concern for food banks. Food bank clients include children, the elderly, pregnant women, malnourished persons and immuno-compromised persons, all groups that are at high risk of food safety related problems. Although food handling is a large part of daily operation for food banks, volunteers and even staff members are rarely trained in food safety.

To address this need, the University of Montana Cooperative Extension Service commissioned a training series designed specifically for food banks. The objective was to provide training which was accessible to food bank staff and volunteers with a wide variety of experience and educational background. Specifically, the series was designed to address 1) the possibility of food-borne illness in food banks, 2) methods to set up food-safe facilities, 3) safe food handling methods, 4) risk assessment for donated foods, and 5) detailed information on repackaging foods.

A needs assessment survey was conducted to provide a research base for program development. As a result of that survey, training materials were developed to be used on at least three levels:

1. a series of booklets (one on each of the five topics listed above) which could be studied separately or as a group,
2. five fact sheets which summarized key points for each of the booklets and could be used for quick study or reference, and
3. a training manual with posters and other teaching aids, which utilized the five booklets, fact sheets and a number of other group activities.

The finished curriculum was reviewed by environmental and educational faculty at the University of Montana, as well as by members of the Montana State Cooperative Extension staff, members of the State Food and Consumer Safety Bureau, and members of the Montana Food Bank Network. The training series was also presented at two consecutive Hunger and Homelessness Conferences (in October of 1995 and October of 1996). Feedback was solicited after each session and was incorporated into the final manual.

## ACKNOWLEDGEMENTS

Several people assisted me directly and indirectly in developing the *Safe Aid* training series. Vicki Watson, Jim Gannon and Marlene Bachmann at the University of Montana provided invaluable guidance and support throughout the project, often bringing me back down to very basic questions. The design committee for the project (Lynn Paul, Peggy Grimes, Alice Dailey and Ron Brook) spent countless hours refining the study direction and reviewing drafts. Jim Carlson, my supervisor at the Missoula City-County Health Department, allowed me to develop much of the series on the department's computers, where it could be shared with other departments and agencies. Jim also approved flexible schedules when I was conducting needs assessment interviews and presenting the material at meetings and conferences. Mary Lou Gilman, Shannon Therriault, and the rest of the staff at the Health Department provided information and advice on a wide variety of topics. Many friends and family have been supportive in helping me finish my thesis: Tom Roy, who never failed to ask when I would be finished (whatever his motivation); Doctors Hennessey, Russo, Cheatle and G. Nevin, who nursed me through two straight years of migraines; friends Chris, Jeff, Terry, Andy, Glen and especially Bill who were always available for late night calls of anguish; my church family and my Mom, Dad, Mike and Steve for words of encouragement and for never failing to believe that I would finish. Perhaps most importantly, my sincerest thanks to my sister-in-law Joyce Willis, who designed the stunning covers for Safe Aid in a very short time line and with not nearly enough money. And finally, my eternal gratitude to my Lord Jesus Christ, through whom all things are possible.

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## I. PROJECT DESIGN

Various national agencies estimate between six and thirty million cases of food-borne illness occur in the United States each year. Food-borne illness is a serious, if undocumented, concern for food banks. Food bank clients include children, the elderly, pregnant women, malnourished persons and immuno-compromised persons, all groups that are at high risk of food safety related problems. Although food handling is a large part of daily operation for food banks, volunteers and even staff members are rarely trained in food safety.

To address this need, the University of Montana Cooperative Extension Service commissioned a training series designed specifically for food banks. The objective was to provide training which was accessible to food bank staff and volunteers with a wide variety of experience and educational background. Specifically, the series was designed to address the possibility of food-borne illness in food banks, methods to set up food-safe facilities, safe food handling methods, and detailed information on repackaging foods.

The summary objective of the Safe Aid project was to provide materials which will equip food handlers and managers at food banks to safely receive, handle, and distribute food products. To accomplish this, the project was designed in five phases.

Phase 1 was a literature review of materials related to food handler and food management training and any studies specifically related to food bank issues. Information from this review was used in a bibliography and as background for phases two and three of the project.

Phase 2 was the design of a food bank surveys and a series of site visits at representative food banks throughout Montana. More information about the surveys and site visits is available in section II of this document.

Phase 3 was curriculum design, which was to take into account the knowledge of food safety, extent of food handling and response to different training methods found in the food bank surveys. In design, the training series was to encourage participant involvement in the evaluation of food handling risks, creative approaches to handling process design,

guided practice at the time of training and independent practice on a continuing basis.

Phase 4 was a food handler training session using the first part of the training series at the Hunger and Homelessness Conference in Great Falls, Montana on October 11-12, 1995.

Phase 5 included review of the draft series by several Cooperative Extension agents, the Food and Nutrition Specialist at MSU Cooperative Extension, the director of the Montana Food Bank Network, the bureau chief and food program manager for the Montana State Food and Consumer Safety Bureau, the manager of the Gallatin County Food Bank, 2 registered sanitarians and professors of Microbiology, Environmental Studies, Education and Sociology at the University of Montana.

## II. Literature Summary

Before beginning curriculum development for Safe Aid, available studies and training series for food safety and for food bank procedures were surveyed to :

1. determine what types of training were available to food banks and other food establishments, and
2. find already-developed concepts and training methods that would be useful in Safe Aid.

While there were many excellent food safety training manuals for restaurants and other commercial food establishments, the manuals were too comprehensive for food banks, often focusing on procedure that food banks rarely use. SAFE, a food handling education program developed by Montana State University (and used in some form by many state extension offices) and ServSafe, a training program provided by the National Restaurant Association, served as excellent reference books and models for presenting food safety information in an organized fashion. Safe also had several helpful diagrams, posters and activities.

Some manuals developed to help with food bank organization also included brief sections on food safety and nutrition. Food bank manuals covered a wide variety of topics however, such as working with donors, accounting and paperwork, finding volunteers, and nutrition; the space allotted for food safety was not enough to cover many important topics. For example, Pantry Pointers, developed by the Food Bank of Western Massachusetts and the Department of Public Health , devoted 33 pages to food safety. Basic descriptions of four microorganisms and conditions which favor their growth were followed by a discussion of which foods should be discarded and information on protecting perishable food, shelf rotation, food handling procedures and cleaning practices. Useful charts and diagrams were included.

Similar information was included in The Food Bank Sourcebook, published by the Montana Food Bank Network (39 pages). The Sourcebook also included an extensive chart of how long food could be kept in a food bank. This manual used only text, however, and was considerably less accessible than Pantry Pointers. A handout from the

Spokane Food bank, entitled “Basic Food Handling and Storage Guidelines”, provided 8 pages of information on food handling and repackaging and several useful charts and posters. Several other food bank manuals that were studied provided similar information.

Finally, two HACCP manuals and the regulations promulgated by Montana State Food and Consumer Safety Bureau were studied for background information. All information from these sources was substantially modified in order to make it accessible to food bank workers.

## II. Food Bank Survey

### A. Survey Design

Since there was little information in the literature about the food safety needs of food banks, a needs assessment survey was developed to provide a research base for curriculum development. Survey goals were to 1) assess staff and volunteer food safety training needs; 2) determine current staff food handling knowledge, attitudes and practices; 3) determine background education levels and preferred training methods for staff and volunteers; and 4) document food safety processes at selected food banks. Survey format and specific questions were reviewed for bias by Paul Miller, a sociology professor at the University of Montana. The survey had multiple components.

1. The first component was an intensive survey given verbally to food bank managers. Included were questions about equipment, the layout and use of the facility, existing training for volunteers, preferred types of training, available training equipment, statistics on clientele, type of food handled at the food bank, food donation, handling and storage processes, food sources, delivery processes and what issues the manager considered critical for food safety.
2. After the management survey was completed, two types of inspections were conducted for each facility:
  - A. The first was a 44-point inspection, as used by the State Food and Consumer Safety Bureau for evaluating commercial food establishments. Food safety violations were noted and scored.
  - B. A HACCP (Hazardous Analysis and Critical Control Point) inspection was used to evaluate repackaging processes. HACCP is a process-oriented review that was developed by NASA to assure food safety in space; it is currently recommended by the National Food and Drug Administration (FDA) and the National Restaurant Association.
3. After the inspections were completed, short survey forms were left with the

manager for all staff and volunteers. These forms asked about educational background, perceived training needs and desired training methods. Some cross-check questions from the management survey were also asked. These questions focused mainly on clientele and food bank processes.

## **B. Choice of Survey Participants**

Eleven food banks were visited in order to obtain a good cross-section of information about food banks in Montana. Potential food banks were suggested by the Montana Food Bank Network based on geographic location, size and type of operation. Of the eleven food banks, five were small (Malta, Polson, St. Ignatius, West Yellowstone and Wolfe Point), five were medium (Butte, Gallatin Valley, Kalispell, Helena and Missoula), and one was large (Great Falls). The food banks interviewed represented several types of food bank operation: grocery store (where the client selects from available products), agency warehouse (banks which store bulk quantities of food for use by smaller local food distribution agencies), farm share (operations which include local produce and gardening operations), delivery (where prescription boxes are made up and delivered to clients) and food recovery (recovering prepared foods from restaurants and other food establishments).

## **C. Survey Results**

The backgrounds of food bank managers and volunteers were as varied as their locations. The Butte, Wolf Point and Malta food banks were operated mainly by senior citizens and retired volunteers. More urban centers, such as Gallatin Valley (Bozeman) and Missoula, were more likely to have working age professionals with some college education. Volunteer education levels were not completely predictable, however; volunteers with college degrees could be found throughout the more rural food banks (such as the St. Ignatius volunteer with a PhD). A few food banks also listed high school students as volunteers. Fifty-five percent of food bank managers had college degrees or some college course work. Eighteen percent had completed high school and 18% had only finished grade school. Fifty-nine percent of volunteers had taken college, vocational or

military courses. Twenty-eight percent had completed high school and 13% were grade school graduates.

Food bank managers had a variety of backgrounds with food safety training. One had been trained as a chef and had taught cooking classes. Two were cooks in restaurants. Two operated catering companies, and four had worked in grocery or warehouse operations. Managers had worked with food banks for an average of 7 years at one or more food banks. Volunteers also had representatives who had cooked in restaurants, worked in hospitals, catered, worked in nursing homes and worked as industrial food chemists. Thirteen percent of volunteers had worked with food in other non-profit organizations (shelters, food drives, etc.). Significantly, 54% of volunteers had no training or experience with food production. Volunteers had worked for an average of 4 years at one or more food banks.

Most food banks offered a wide range of foods: breads, canned goods, dairy goods and eggs, fresh produce (local or commercial), bulk dry goods (sugar, flour, rice, pasta, etc.), meat (domestic and wild game), frozen foods, and baby foods. Two food banks offered pet foods, five offered over-the-counter medicines, and three offered prepared foods donated by local restaurants. The eleven food banks in the survey group also repackaged a wide variety of foods: rice, flour, sugar, beans, pasta, oils, cereal, dry milk, coffee and tea, applesauce, cornmeal, oatmeal, soup, detergent, powdered eggs, raisins, donuts and various meats.

### Food Handling Practices at Food Banks

Self-reported food handling practices varied between management and volunteers and between food bank locations. However, at least two common responses showed a lack of knowledge of safe food handling procedures. When asked how dishes were washed in their food banks, 72% of managers replied with “soap and water”. One manager reported that dishes were “taken home” to be washed, and one manager reported the use of a dishwasher. Two managers stated that dishes were not washed; this is of special concern since all food banks reported repackaging operations. Only one manager reported that

dishes were washed, rinsed, sanitized and air dried.

Similarly, only one volunteer reported a wash, rinse, sanitize and air dry procedure. One worker also reported a wash, sanitize and rinse procedure; this procedure is unacceptable since soap reduces the effectiveness of sanitizing agents. Thirty-six percent of volunteers reported that dishes were washed with soap and water, with 29% of these stating that chlorine bleach was added to the wash water. Two workers reported taking dishes home, and six reported the use of dishwashers. Again, it was a concern that 16 workers (26% of volunteers) reported that dishes were not washed.

In a similar question, two of the 61 workers responding to the survey reported that they did not wash their hands when repackaging foods. Seventeen workers did not use gloves for repackaging. Only 47% of the workers reported using sterilized containers or new baggies for repackaging. Six workers stated that additional materials (such as recipes or directions) were put inside baggies with food.

### Training Equipment at Food Banks

Not all food banks surveyed had access to training materials or equipment. Four locations had televisions and video recorders. Six had audio tape players; seven had computers; and eight had access to a conference room. Only one food bank had access to an overhead projector or a fax machine. Two food banks had no access to training equipment or facilities.

Food bank managers overwhelmingly agreed that their staff needed additional training. They were interested in a variety of training materials: 72% in booklets or other written training materials, 64% in a series of 1/2-hour training courses, 64% in charts and posters, 45% in workbooks or videotapes, 27% in videotapes with workbooks, and 27% in one 4-hour training course or in audio tapes. Volunteers were less enthusiastic, with only 19% believing that they needed additional training. The most popular methods of training for staff were booklets, charts and posters, video tapes and a series of 1/2 hour training sessions.

From these survey results, several assumptions were used to design the Safe Aid

training curriculum:

1. There is a serious need for safe food handling training in food banks. In spite of the fact that they are handling food which goes to an at-risk population, most workers are not aware of some of the most basic rules of food sanitation.
2. Food banks deal with a wide variety of foods, including many potential hazardous foods. Many of these foods are directly handled, as when repackaging. Food bank procedures pose significant risk for food-borne illness.
3. Only a small minority of food bank workers have been exposed to food safety training.
4. Most food bank managers and volunteers have worked at food banks for several years and plan to continue to volunteer. Food safety training would be a worthwhile investment for food banks.
5. The educational backgrounds and preferred learning styles of food bank managers and volunteers are widely varied. Additionally, food banks are often short of workers and time. A curriculum designed to train food bank workers must be flexible and allow training in several different formats and in short installments.
6. Initially, training which relies minimally on display equipment should be designed. A combination of booklets, fact sheets and posters or charts seems most likely to engage the variety of workers seen in food banks. Eventually, it would also be worthwhile to offer video taped training sessions.

### III. Applications and Recommendations

The current version of *Safe Aid* is being printed by the University of Montana.

Complementary copies will go to each Montana Food Bank as well as the State Food and Consumer Safety Bureau and various county health departments. Additional copies will be available for sale by the Cooperative Extension Service at Montana State University. According to Extension Service protocols, copies will also be available to all state extension services.

In addition, the *Safe Aid* series is being considered for national distribution by Second Harvest, a national food bank organization. Although Montana food banks were used for the focus studies on which *Safe Aid* is based, the same food safety information would apply to food banks in other states. One topic that was not addressed in *Safe Aid* is prepared food recovery (from restaurants, schools or other food establishments). Prepared food recovery is governed by state and federal regulations and involves much more intensive food safety processes. While prepared food recovery is not widely practiced in Montana food banks, a booklet on the topic should be added for any national distribution.

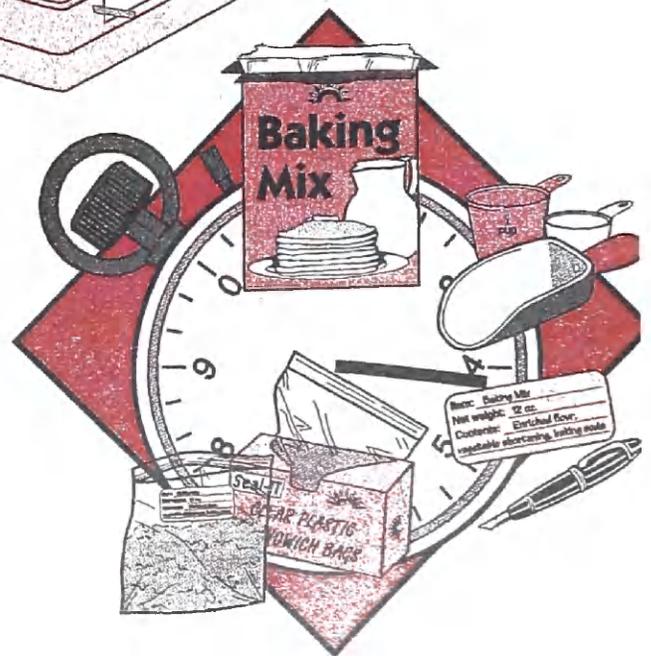
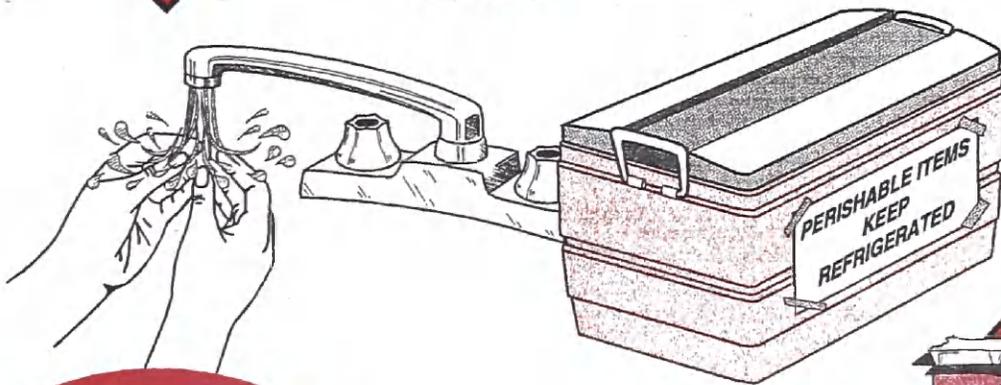
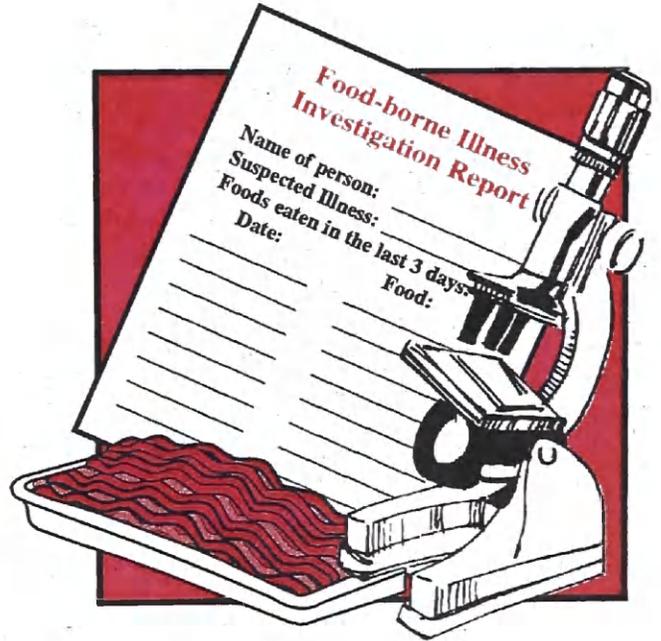
Many of the food bank managers and volunteers who were surveyed were interested in a video taped training class. This would be a valuable addition to *Safe Aid* and would be relatively inexpensive if produced through a public television format. Companion series for soup kitchens and homeless shelters would also be a good avenue to explore.

## IV. Bibliography

- Educational Foundation for the National Restaurant Association. ServSafe. Chicago: 1995.
- FDA, Department of Health and Human Services. Current Concepts in Food Protection. Rockville, MD. 1987.
- Haynes, Deborah C. ed. The Food Bank Sourcebook. Montana Food Bank Network: Missoula, MT. 1984.
- Michigan State University Extension. Operation Risk: Reducing the Incidence of Sick Kids Through Safe Food Handling. 1993.
- Montana Food Bank Network. The Food Bank Sourcebook: Everything You Need to Know About Starting and Running a Local Food Bank. Montana Food Bank Network: Missoula, MT. April 1984.
- Montana State University Extension System. Safe: Food Handling Education Program for Food Service Workers. Bozeman, MT. July 1992.
- Purdue University Cooperative Extension Service. Safe Food For the Hungry. 1994.
- Spokane Food Bank. Basic Food Handling and Storage Guidelines. Spokane, 1994.
- The Food Bank Incorporated. Pantry Pointers: Healthful Hints for Your Pantry. Hatfield, MA. December 1992.
- Tortora, et. al. Microbiology: An Introduction. The Benjamin/Cummings Publishing Company Inc.: Redwood City, California. 1992.
- University of Massachusetts Cooperative Extension Program. Safe Food at Home: A Food Safety Train-the-trainer Program. USDA Project 93-EFSQ-4077.
- University of Massachusetts Medical Center. Healthy Food for Shelters and Soup Kitchens. 1992.
- University of Vermont Extension Service and New Hampshire Cooperative Extension. SAFE: Safety Awareness in the Food Environment. USDA Special Project 91-EFSQ-1-4003. 1993.

# SAFE AID

## A Food Safety Training Program for Food Banks



# *Safe Aid*

## **Section A: Introduction**

## Welcome to Safe Aid . . .

Safe Aid: A Food Safety Training Program for Food Banks was commissioned in 1995 by the Montana State University Extension Service under a grant from the U.S. Department of Agriculture. The project was coordinated by Dr. Lynn Paul, Food and Nutrition Specialist at MSU Extension Service. Safe Aid was designed and written by Vickie Willis, a Registered Sanitarian and Environmental Health Specialist with the Missoula City-County Health Department. The goal of the Safe Aid project was to construct a comprehensive food safety manual that would be accessible to food bank directors, staff and volunteers. An in-depth survey was conducted at nine representative food banks from across Montana to assess important concerns and the most usable format for presenting food safety information.

Safe Aid has been designed to be used on four levels, depending on how much time is available.

**Level 1:** is the set of five booklets which cover the most important areas of food safety in Montana food banks: food-borne illness, facility design and maintenance, risk management, safe food handling, and re-packaging operations. Booklets 1 through 5 can be found in the first 5 sections of the Safe Aid notebook.

**Level 2:** is a series of 1- or 2-page summary sheets. Each sheet summarizes one of the Safe Aid booklets. This level will be especially useful to food banks with a high turnover rate in volunteers or food banks with limited time available for training. The summary sheets can be found in section six of the Safe Aid notebook.

**Level 3:** is a training manual (section 7) which gives background information and teaching aids for the series. Safe Aid can be taught in at least two ways:

1. Assign the booklets or summary sheets to all staff and volunteers. Ask an individual or team to lead a discussion of each booklet using the material and teaching aids in the training manual as well as the information in the booklets.
2. Work through the booklets as a group. Encourage participation, by providing copies of exercises and self-tests available for each staff member and volunteer.

**Level 4:** is a series of posters which should be used with each of the first three levels. These posters will also be effective when hung in the appropriate areas of the food bank (near the handwash sink, refrigerators or preparation tables, etc.).

However you use Safe Aid, we hope that it encourages your staff and volunteers to make food safety a priority. If you have questions or comments about the series, you can contact the Food and Nutrition office at MSU Extension office at (406) 586-9582.

# *Safe Aid*

## **Section B: Table of Contents**

# **SafeAid: A Food Safety Training Program for Food Banks**

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- Section 4: Safe Food Handling
- Section 5: Re-packaging Bulk Foods
- Section 6: Summary Sheets
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- Section 8: Posters

# *Safe Aid*

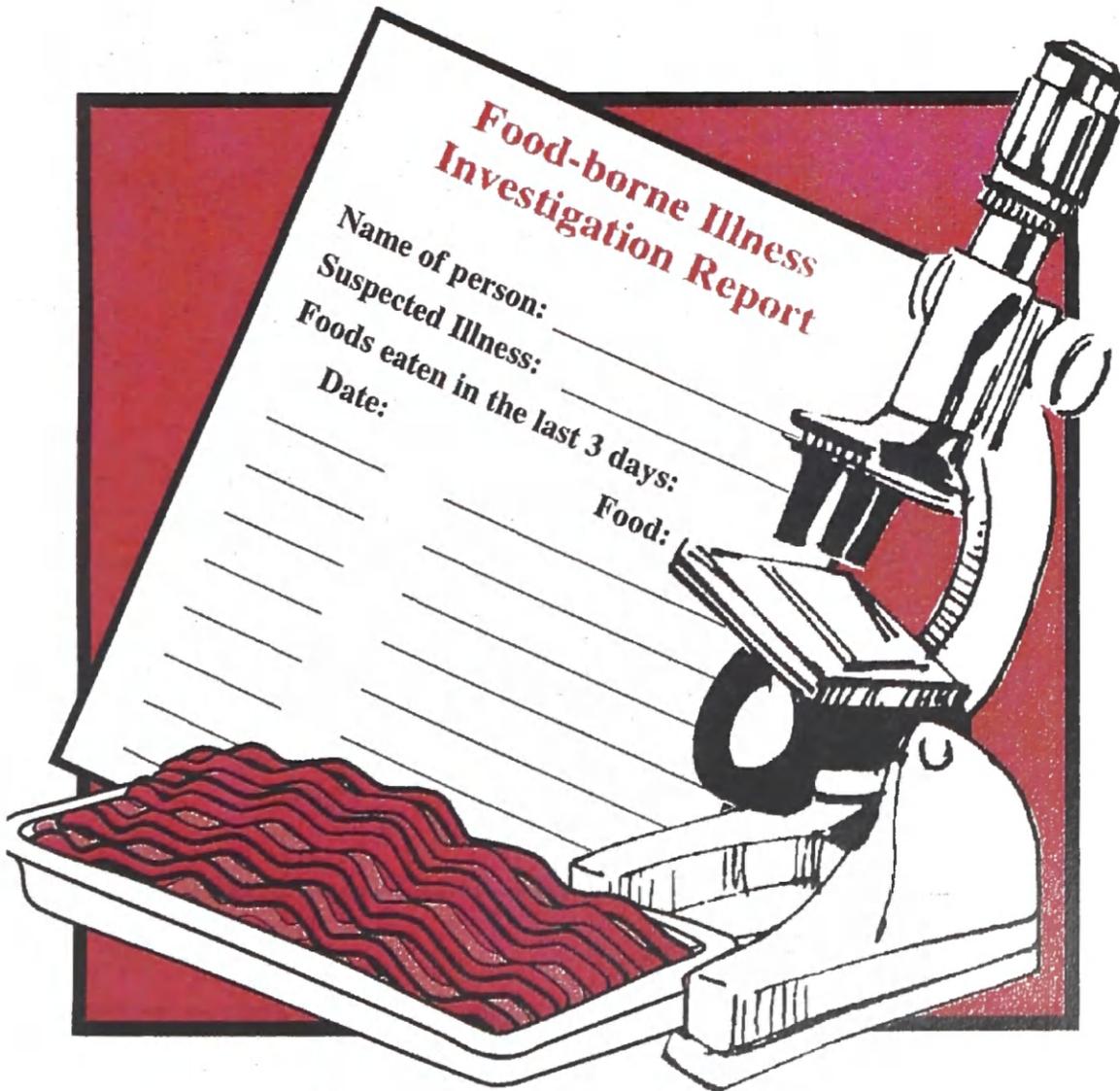
## **Section C**

### **Booklet 1: Food Banks and Food-Borne Illness**

# SAFE AID

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A Food Safety Training Program  
for Food Banks



**Booklet 1**

**FOOD BANKS AND FOOD-BORNE ILLNESS**

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## I. Why Study Food Safety?

**“... Of course our food is safe. It fills an important need in our community... that’s all we need to know.”**

Actually, it’s not. There are many reasons that food banks should be concerned about food safety.

1.) Providing safe food is as important as providing food itself. A hungry person is more likely to consume food they wouldn’t normally choose. If this food is unsafe, it can cause food-borne illness. Food-borne illness, which affects 24 to 81 million people per year, can lead to serious discomfort, life-threatening complications, and even death.

2.) Unsafe food could injure the food bank and its donors. Good Samaritan Law, which protects food donors, does not excuse ignorance of food safety practices, especially if that ignorance results in personal harm. One publicized food-borne illness could result in loss of donations and community support.

## Helping people in need



is what food banks are all about.

Ironically, those people who are most in need may be the most affected by careless handling of food. Food-borne illnesses can be deadly for people whose health is already at risk:

- ☞ **Malnourished people:** (with long-term poor nutrition) are at greater risk of food-borne illness because of damaged immune systems.
- ☞ **Young children:** are at higher risk because their immune systems are not yet fully developed.
- ☞ **Pregnant women:** may pass any food-borne disease they encounter to the fetus. In some cases, this can cause miscarriage or stillbirth.
- ☞ **Senior adults:** may be at risk because of weakened immune systems, malnutrition, less ability to smell or see food spoilage, and physical changes (such as reduced stomach acid, poor circulation, and weakened kidneys) which make food-borne illnesses harder to fight.
- ☞ **Chronically ill people:** (with immune deficiencies due to cancer, AIDS, kidney or liver disease, diabetes, or similar disorders) are often difficult to treat for the symptoms of food-borne illness (vomiting, diarrhea, dehydration, etc.). As a result, their systems are weakened, hastening the progress of their disease or leading to death.
- ☞ **All at-risk people:** who encounter food-borne illness may contract complications such as reactive arthritis, kidney failure, nervous system damage, progressive joint and spine disease, meningitis, and other chronic or life-threatening diseases.

**“... No one has ever complained about becoming sick from our food. We don't have contamination problems.”**

Again, people with health problems or chronic illness due to malnutrition are likely to think of the symptoms of food-borne illness as a part of everyday life. They are not likely to associate these symptoms with food, and are even less likely to follow through and report a suspected problem.

Bacteria, the most common cause of food-borne illness, are found everywhere. It would be difficult, if not impossible, to find food that did not contain some bacteria. Any institution that deals with food has the potential for contamination. Bacteria only become a problem, however, when they multiply to sufficient numbers to cause an illness. The best way to avoid the dangers of food-borne illness is to handle food safely in order to minimize the chance that bacteria will multiply. The booklets included with this Safe Aid course are designed to help you avoid food-borne illnesses in your food bank.



## II. What is Food-borne Illness?

Food-borne illness is any disease caused by a micro-organism or foreign substance in food. Food-borne illness normally produces flu-like symptoms lasting a few hours (ex. Staphylococcal intoxication) to a few months or years (ex. Botulism).

Page 6 of this booklet describes the micro-organisms that cause food-borne illness. Micro-organisms produce food-borne illness either by causing infections or intoxications.

**Infections** happen when enough live micro-organisms have reproduced in food or have been transferred from food to the intestines where they have produced an “infective dose” (the dose at which a person becomes ill). The severity of infection is decided by:

① the number and virulence (strength) of the micro-organism, and

② the resistance of the victim.

**Intoxications** are caused by a toxin (poison) that is produced by bacterial cells. The amount of the toxin is determined by the number of bacteria. Cooking food may kill harmful micro-organisms but often doesn't affect toxins.

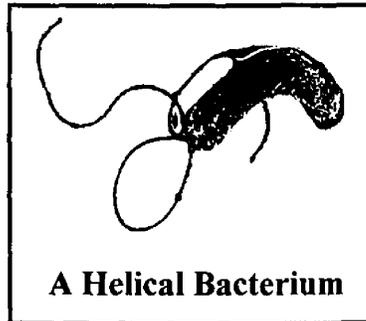
The human body can (and does every day) handle small numbers of most micro-organisms. Illness is caused only when food contains an infective dose of micro-organisms.

### III. What Causes Food-borne Illness?

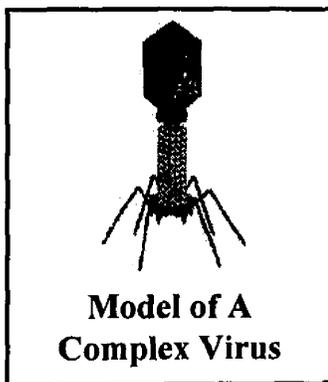
Food-borne illness may be caused by micro-organisms (organisms too small to see) or by chemical or physical contamination of food (such as pesticides or glass chips). Physical and chemical contamination, covered later in this booklet, are more accurately termed “food poisoning”.

There are four general types of micro-organisms which cause food-borne illness.

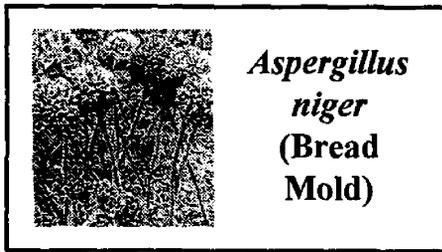
- 1.) **Bacteria** are single-celled organisms which may live in animals, water, soil or food. Bacteria cause the most commonly reported food-borne illnesses, either by their physical presence or by producing a toxin. Toxins are generally more heat resistant than the bacteria themselves. Bacteria are small: you could fit more than 100 million bacteria on a single grain of sugar.



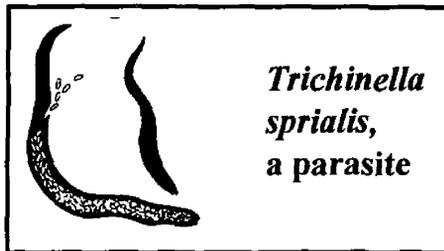
- 2.) **Viruses** are even smaller than bacteria, and can only reproduce once inside a living (ex. human) cell. Viruses are often found in untreated water and on unclean food service workers.



3.) **Molds** can live in soil, water, plants or animals. They grow by absorbing organic material from their host.



4.) **Parasites** live inside animal and human hosts and absorb nutrients to complete their life cycle. Parasites are most often found in meat and fish products.

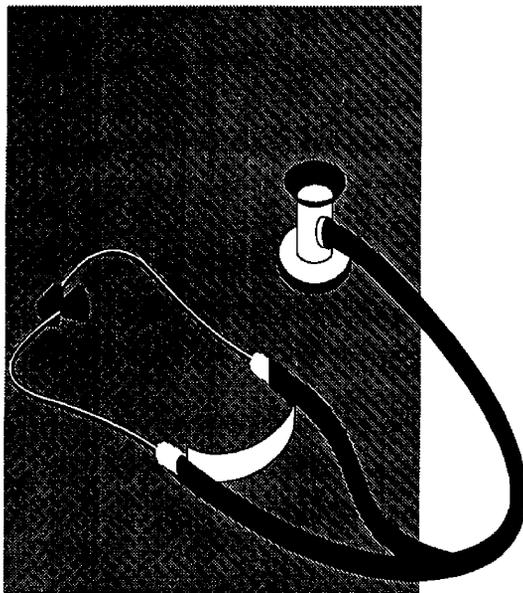


Each type of micro-organism operates differently within a human host. In order to simplify things, the rest of this booklet will deal mostly with bacterial growth. Keep in mind, however, that the same methods for controlling food-borne illnesses caused by bacteria also apply to illnesses caused by other micro-organisms.

#### **IV. What Types of Food-borne Illness and Food Poisoning Could be Found in Food Banks?**

Food banks handle a variety of food: from dry goods and vegetables to milk, meats, frozen products and prepared restaurant food. Illnesses associated with these foods are explained on the following pages.

This information may change your ideas about food-borne illness. For example, not all food-borne illnesses show up immediately: hepatitis may take up to 50 days. And not all food-borne illnesses produce only flu-like symptoms. Some food-borne illnesses can kill!



## **A. Infectious Hepatitis**

Organism: *Hepatitis A virus*

Source: Infected workers (human feces, urine or blood), contaminated water, insects, rodents.

Common Foods: Foods not cooked after handling such as baked products, luncheon meats, salads, raw vegetables, sandwiches, fruits.

Symptoms: Fever, appetite loss, nausea, fatigue, jaundice, darkened urine, enlarged liver.

Prevention: Good worker hygiene, minimized contact of hands with food, separation of infected persons from food preparation, proper sewage treatment.

Note: Signs of hepatitis may take 15 to 50 days to appear and may last for weeks or even months.



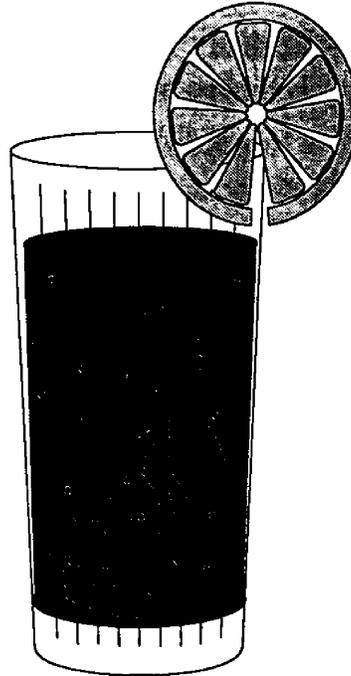
## **B. Norwalk Virus**

Organism: *Norwalk virus*

Source: Human intestines, sewage, contaminated water.

Common Foods: Ice, coleslaw, baked goods, contaminated water.

Symptoms: Diarrhea, nausea, vomiting, abdominal pain, headache and fever. May cause dehydration or death among elderly or immuno-compromised people.



Prevention: Good personal hygiene by workers (ex. frequent hand washing), separation of infected workers, thorough cooking, rapid cooling, prevention of cross-contamination, clean utensils and surfaces, minimal hand to food contact, safe water sources.

Note: 60 to 80% of people exposed to this virus become sick!

## C. Botulism

Organism: *Clostridium botulinum* bacteria

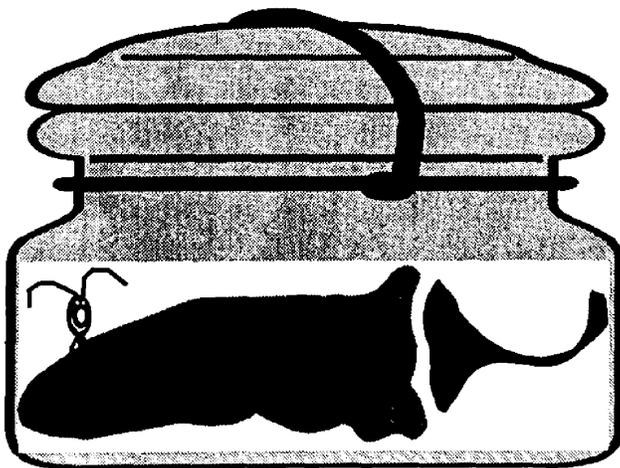
Source: Soil, dust, intestinal tract of animals.

Common Foods: Improperly canned foods (beans, pepper sauce, tomatoes and tomato juice, salmon, asparagus, etc.), foods held at room temperature in low-oxygen environment (ex. baked potatoes).

Symptoms: Headache, dizziness, tiredness, double vision, muscle weakness, and difficulty speaking, swallowing and breathing. **Death is likely without an antitoxin!**

Prevention: Avoid home-canned foods, do not use swollen or damaged cans, prepare and store foods properly, do not create low-oxygen, risky-temperature environments (such as leaving tinfoil-wrapped baked potatoes at room temperature).

Note: Botulism may already be present on food you receive or may be introduced at your facility. The key to prevention is good risk analysis and safe food handling processes (see booklets #3 and #4).

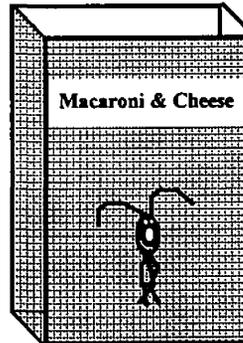


## **D. Cereus Food Poisoning**

Organism: *Bacillus cereus* bacteria

Source: Soil, dust, water.

Common Foods: Cereal and rice dishes, macaroni and cheese, spices, dairy products, soups, sauces, potatoes, meat.



Symptoms: Abdominal pain, nausea, vomiting, diarrhea.

Prevention: Good sanitation, keep foods hot (>140°F) or cold (<41°F), cool leftovers (donations) quickly.

## **E. Trichinosis**

Organism: *Trichinella spiralis* parasites

Source: Muscle of meat-eating animals.

Common Foods: Raw pork and wild game.

Symptoms: Flu-like, fever, puffy eyes, sweating, weakness, muscle pain, toxemia, myocarditis (inflammation of the heart muscle).

Prevention: Prevent cross contamination, freeze suspect meat products 10-20 days before cooking, cook meat to 160°F.

## F. Staphylococcal Intoxication

Organism: *Staphylococcus aureus* bacteria

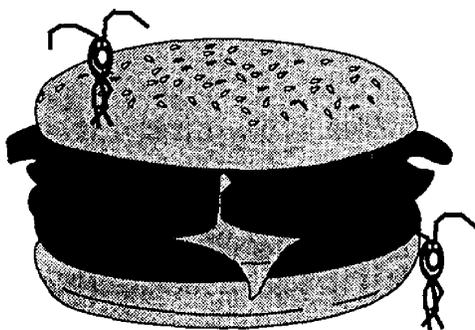
Source: Skin, nose, throat and nasal passages (coughs and sneezes), hands, hair, sores, pimples, raw milk, sewage.

Common Foods: Dairy products, poultry, meats, tuna, sandwich fillings, pies, salad dressing, luncheon meats and hot dogs.

Symptoms: Nausea, vomiting, diarrhea, cramps.

Prevention: Keep ill workers away from foods, wash hands and utensils before preparation or handling, minimize contact of hands with food, chill foods rapidly, keep foods hot ( $>140^{\circ}\text{F}$ ) or cold ( $<41^{\circ}\text{F}$ ).

Note: At warm temperatures, *Staphylococcus aureus* produces a poison/ toxin that is NOT destroyed by cooking. *Staphylococcus aureus* is found on the mucous membranes of 30 to 50% of the population and on over 20% of cheddar cheese.



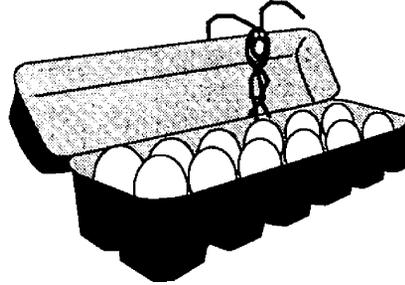
## **G. Salmonellosis**

Organism: *Salmonella species* bacteria

Source: Intestines of humans and animals, flies.

Common Foods:

Meats, eggs,  
poultry (40% of  
all raw chickens),  
fish, cream desserts,  
dairy products.



Symptoms: Flu-like with headache, fever, and dehydration; may trigger arthritis.

Prevention: Wash hands & utensils, prevent cross contamination, insure that all workers with sores on their hands wear gloves, cook foods thoroughly, proper refrigeration (<41°F).

## **H. Campylobacterosis**

Organism: *Campylobacter jejuni* bacteria

Source: Intestinal tract of animals, soil, water.

Common Foods: Meat, poultry (from 20 to 100% of raw chicken), fish, raw dairy products.

Symptoms: Flu-like symptoms, fever, bloody stools. May cause meningitis and arthritis.

Prevention: Don't drink or clean with untreated water, prevent cross-contamination, cool foods quickly, cook thoroughly.

## I. Listeriosis

Organism: *Listeria monocytogenes* bacteria

Source: Soil, intestinal tract of animals.

Common Foods: Unpasteurized milk, cheeses, cut vegetables, cabbage, meat, poultry, cold smoked fish.

Symptoms: Headache, fever. May cause blood poisoning, meningitis, abortion, or death in immuno-compromised people.

Prevention: Good sanitation, use only pasteurized milk and milk products, keep cold foods below 41°F, prevent cross-contamination.

Note: Lysteria can grow in cold temperatures (34 degrees F.) and in foods containing salt. Almost 1/4 of lysteria cases end in death.

## J. Yersiniosis

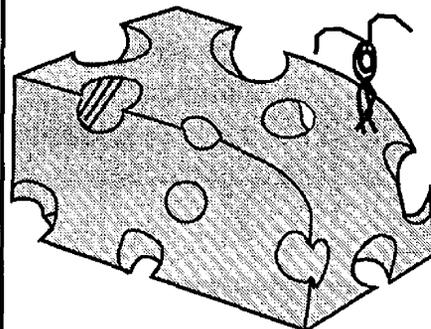
Organism: *Yersinia enterocolitica* bacteria

Source: Intestinal tract of animals.

Common Foods: Meat (especially pork and poultry), raw milk, vegetables, contaminated water, chocolate milk.

Symptoms: Fever, bloody stools. May cause blood poisoning, arthritis, liver disease, meningitis.

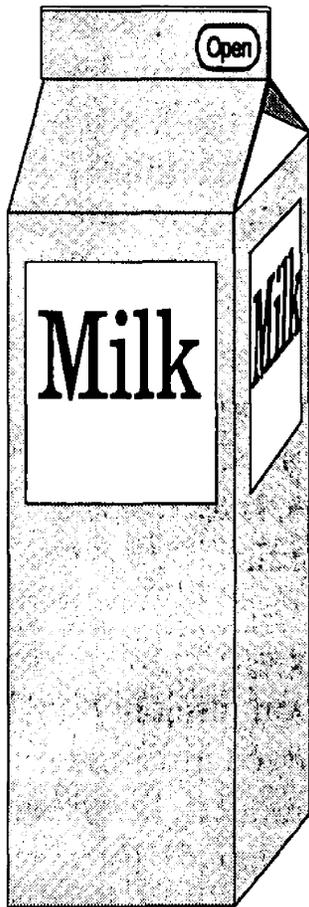
Prevention: Good sanitation, use only pasteurized milk and milk products, keep cold foods below 41°F, prevent cross-contamination.



## **K. Shigellosis (Bacillary dysentery)**

Organism: *Shigella species* bacteria

Source: Intestinal tract of man and primates.



Common Foods: Milk, dairy products, poultry, potato salad, other salads, seafoods.

Symptoms: Fever, abdominal pain, pus or blood in stools, secondary infection.

Prevention: Good sanitation, minimize contact of hands with food, keep cold foods below 41°F.

Note: *Shigella* is often passed when infected workers handle food.

## **L. Hemorrhagic Colitis**

Organism: *E. coli* 0157:H7 bacteria

Source: Intestinal tract and feces of animals and humans, water supplies contaminated by animal or human sewage.

Common Foods: Meats (especially ground beef), poultry, raw milk and cheeses, raw vegetables.

Symptoms: Bloody stools, cramps, urinary infection and kidney failure, strokes, seizures, coma and death.

Prevention: Prevent cross contamination, keep cold foods below 41°F, wash vegetables thoroughly, wash hands after using toilet, use clean water for all food preparation and dishwashing, wash and sanitize utensils between use, control insects (especially flies) and rodents.

### ***E. Coli* Outbreak in Missoula, Montana**

In July and August of 1995, over 120 people (40 confirmed cases, 80 unconfirmed) were affected by an *E. coli* outbreak in Missoula and Ravalli Counties of Montana. Six of these people were hospitalized.

A special Communicable Diseases Response Team was called in to investigate. They found that lettuce was the cause of the *E. coli* outbreak. It is suspected that the lettuce became infected with *E. coli* when it was watered from an irrigation ditch which ran through a cow pasture and feed lot. *E. coli* is harbored in the intestines of healthy cattle, then shed at intervals in cow waste. This waste can transmit the disease to water, which transmits it to vegetables.

## M. Chemical Food Poisoning

Chemical food-borne disease is caused when poisonous substances are added to food. The two major causes of chemical poisoning are metals and chemical products.



**Metals:** When acid foods are stored and/or prepared in equipment containing cadmium, lead, tin and zinc, some of the metal dissolves into the food and can cause chemical poisoning.



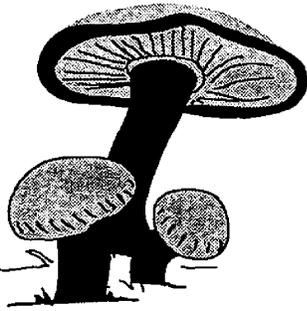
**Chemicals:** Chemical compounds (such as cleaners, detergents, sanitizers, pesticides and food additives) can be deadly when used for the wrong purpose or in excessive amounts, or when accidentally added to food.

**Symptoms:** Convulsions, burning of the stomach lining, death.

### Prevention:

- 1.) Use glass/plastic pitchers to store acidic foods.
- 2.) Do not spray or apply pesticides where food could be affected by the chemicals. Use only “food-friendly” pesticides approved by FDA or EPA and follow package directions.
- 3.) Wash all raw fruits and vegetables.
- 4.) Keep all rodent poisons away from food areas.
- 5.) Store all substances appearing to be food (like salt/sugar-looking cleaning powders) well away from food.
- 6.) Never store chemicals or cleaners in old food containers.

## N. Naturally Occurring Food Poisoning



There are several hundred naturally occurring toxins that either contaminate food (such as molds) or are a normal part of the food (such as poisonous fish or mushrooms).

The most common sources of food poisoning are rhubarb leaves, certain types of house plant leaves and berries, wild celery, green or sunburned potatoes, and poisonous mushrooms. Toxins can also be found in saffron, mace, nutmeg, moldy grains and peanuts, raw rutabagas, turnips, broccoli, kale, soybeans, pure licorice extracts, certain types of tea, spinach, lettuce, and beets.

Symptoms: Rashes, dizziness, jaundice, diarrhea, nausea, vomiting, severe headache, constipation, damage to body organs, collapse, and death. Repeated exposure may cause harm that remains undetected for several years, such as cancer.

Prevention: Never accept foods about which there is any question of safety. A varied diet helps reduce the risk of natural food poisoning

## A Personal Approach\*

Now that you've been introduced to food-borne illness, think about how it could affect your food bank by answering the following questions.

- 1.) Choose 2 or 3 different foods stocked by your food bank and list all food-borne illnesses which could affect them (see example below).

<u>Item</u>	<u>Possible Illnesses</u>
A. <i>Chicken</i>	<i>Staphylococcus, Salmonellosis, Camphylobacteriosis, Listeriosis, Yersiniosis, Shigellosis, Hemorrhagic Colitis, Chemical Food Poisoning</i>
B.	
C.	
D.	

- 2.) Which at-risk populations does your food bank serve? How would a food-borne illness affect them?
- 3.) What are the most serious consequences of food-borne illness?

\* To fill in the blanks, make a copy of this page or obtain a blank form from the train-the-trainer workbook for this Safe Aid series.

## V. How Do We Control Bacterial Growth?

Illness-causing bacteria are found everywhere (in the air, soil, dust, and water; on most surfaces; in animals and people) and can be transmitted to almost any food. Foods then provide the essential nutrients and moisture for bacterial growth.

Bacteria need several things in order to reproduce:



**Temperature.** Ideally between 41°F and 140°F (some grow at other temperatures).



**Water.** (moisture).



**Food.** Although bacteria can grow on any food, they especially like high protein foods such as milk, meat, and eggs.



**Time.** Given the right conditions, just 1 bacteria can produce 33 million bacterial cells in 12 hours.

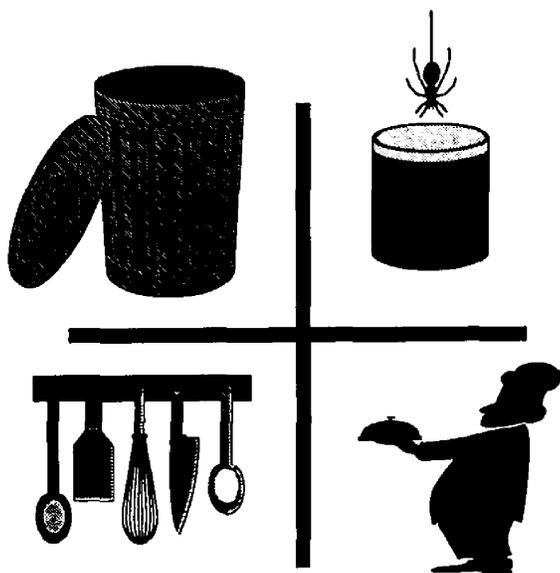


**Other conditions,** such as oxygen and the right chemistry (ex. acidity or salt).

Preventing food-borne illness requires either killing bacteria or slowing their growth (often by controlling **temperature and time**) enough to prevent an infective dose of bacteria or toxins. An example of slowing bacterial growth is proper refrigeration. Although most microbes do not die when refrigerated or frozen, they do stop reproducing.

**The easiest way to prevent food-borne illness is to control bacterial growth by:**

- ✎ providing a clean and sanitary environment for storing and processing food,
- ✎ inspecting donations for contamination and determining how long food may be stored,
- ✎ proper food handling and storage (including good worker hygiene), and
- ✎ proper food preparation (specifically in re-packaging food).



Ways to manage these control points will be discussed in the rest of the **Safe Aid** booklets:

- 📖 Booklet 2 (Sanitary Surroundings: Setting up for Safe Food) will explain how to set up a safe building, storage and work areas. It will also cover pest control.
  
- 📖 Booklet 3 (Risk Management) will discuss how to decide whether a donated food item is safe for redistribution and how long food items may be safely stored.
  
- 📖 Booklet 4 (Safe Food Handling) will define safe food handling, storage and personal hygiene techniques.
  
- 📖 Booklet 5 (Re-packaging Bulk Foods) will explain how to safely re-package bulk foods. This booklet will also introduce the HACCP system of safe food management.

Note: This series was designed for common food bank procedures. Food banks which engage in recovery or hot food programs should receive additional training (such as the SAFE program taught by Cooperative Extension).

## VI. Self Test \*



1. Why is food safety important at a food bank?
2. What is a food-borne illness?
3. What is an “infective dose”?
4. Can all food-borne illnesses be controlled by cooking food? (Hint: think about “toxins”.)
5. Which food-borne illnesses can be controlled by good worker hygiene?
6. What conditions do bacteria need in order to reproduce?

\* To complete this exam, make a copy of this page or obtain a blank copy from the train-the-trainer workbook in this Safe Aid series.

# *Safe Aid*

## **Section D**

### **Booklet 2: Sanitary Surroundings, Setting up for Safe Food**

# SAFE AID

## Food Safety Training Program

### Food Banks



### Booklet 2

## ANITARY SURROUNDINGS: SETTING UP FOR SAFE FOOD

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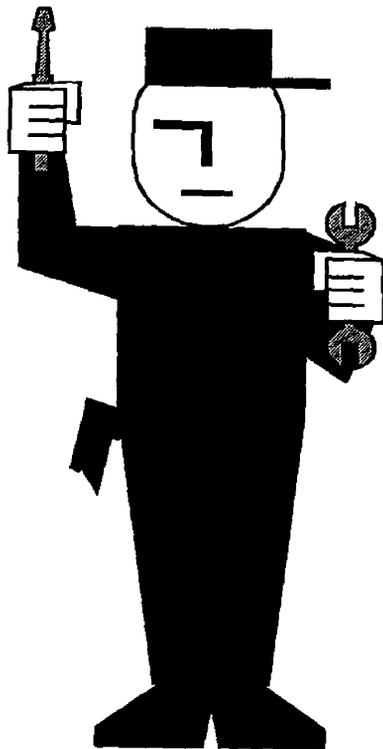
## 1. Are Safe Facilities Important?

Bacteria need favorable time, temperature and moisture to grow and reproduce in food. Controlling these factors will be the focus of Book 4, Safe Food Handling.

Before we discuss controlling bacterial growth, however, it is important to understand how food becomes contaminated. There are three ways that contamination may occur in food banks.

1. **Contaminated Products.** Some bacteria are already present in the food that is taken into the food bank. Scientists have estimated, for example, that up to 90% of raw chickens are infected with *Salmonella* species bacteria. Contamination may originate naturally in the raw materials or it may be introduced during processing.
2. **Cross-contamination.** One of the major sources of bacterial and viral contamination in any food establishment is poor worker hygiene. Cross-contamination can also come from dishes, utensils, work surfaces and other food. For example, cooked foods stored under raw hamburger could become contaminated by dripping juices.
3. **Other Transport Mechanisms.** Bacteria can also be transmitted to food by insects, rodents, airborne dust and water.

How you set up and maintain your food bank will determine how many routes bacteria have to invade and thrive. The following pages give guidelines to facility construction, organization, cleaning and maintenance.



**NOTE:** Guidelines in this booklet focus on food sanitation concerns. Local building codes and OSHA regulations may impose additional requirements on your facility. These requirements rarely conflict with sanitary concerns.

## 2. Building and Grounds

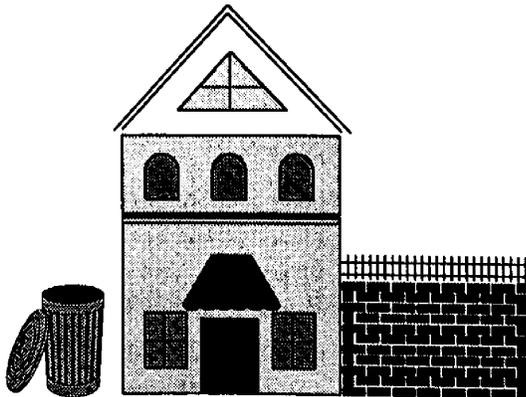
The area surrounding a food bank should be:

- kept clean and clear of debris,
- mowed frequently, with weeds removed and vegetation no closer than 2 feet to the building,
- clear of standing water,
- free of any evidence of insects and rodents, and
- free of trash, with trash containers covered, on a paved surface and properly secured.

The building exterior should be:

- free of holes or cracks, and
- fitted with tight doors and windows.

These precautions help eliminate areas where pests and dirt can enter your building.



### 3. Water and Sewer

Any establishment providing food must have hot and cold water which is:

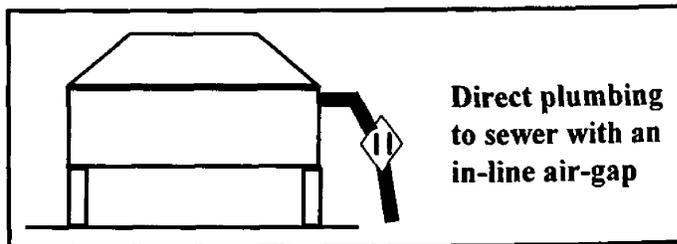
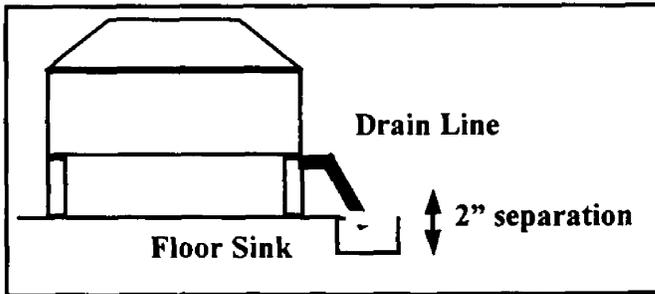
- ◆ **safe and uncontaminated.** If the food bank purchases water, bacterial tests are taken monthly by the public water supply. Food banks on private wells should take quarterly bacterial tests. (Contact your county health department for more information.)
- ◆ **adequate** to supply all processing, cleaning and support services.

Sanitary sewer services are also essential (and required in most counties). These services may be provided by a town or city, or may be a private system (such as a septic tank and drainfield). All waste waters (including “gray” water from refrigerator condensing units, sinks and washing machines) must go into the sewer system.

There should be no cross-connections between the water supply and sewer. Examples of cross-connections include:

- ◆ direct plumbing connections between the two systems, or
- ◆ hoses which hang down into a mop sink or remain connected to an outside faucet. (This practice is acceptable only if you install a vacuum breaker or other backflow prevention device.)

Ice machines and vegetable preparation sinks should be air-gapped in one of the following ways:



#### 4. Cleaning Equipment Organization

A closet or room which is separate from all food handling and storage activities should be designated for the storage of all cleaning equipment and chemicals. This would include:

- mops, mop buckets, and wringers,
- brooms and vacuum cleaners,
- detergents, sanitizers, and other chemicals.

Cleaning rags may be stored with cleaning equipment or in another part of the food bank. In either case, clean rags should be stored protected and separate from dirty rags.

Whenever possible, a mop sink should be located near the cleaning storage closet. In **no case should dirty mop water be emptied into food or utensil sinks.**

## 5. Floor, Walls, and Ceiling

The materials used to construct floors, walls and ceilings should be easily cleanable, non-absorbent, durable and smooth (see “ENDS” on page 8). The examples below cannot cover all situations. If your building is constructed of different materials, ask yourself if it meets the ENDS criteria.

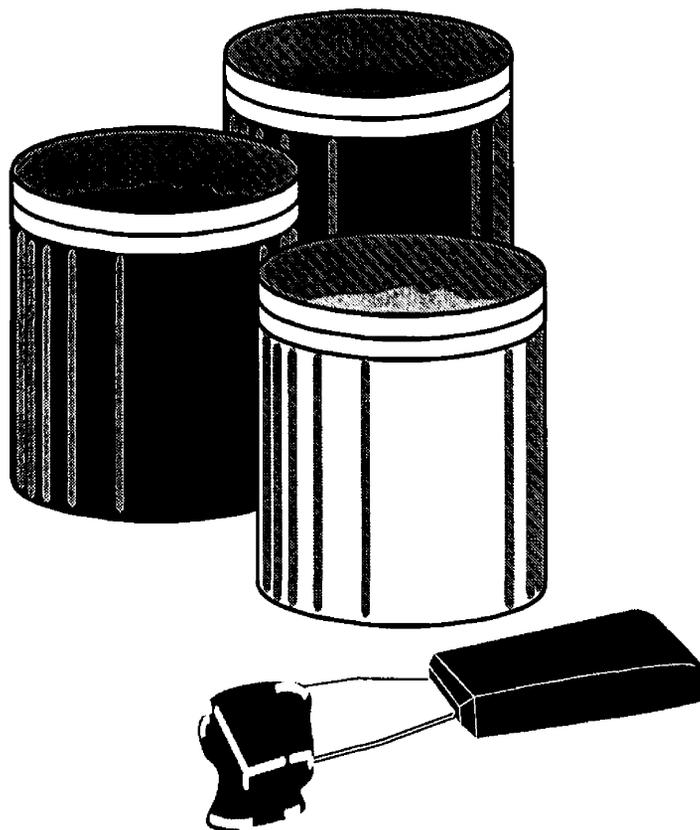
For **floors**, ENDS means seamless, sealed concrete, tile or linoleum. Carpet would not be a good choice for floor covering since it is absorbent and difficult to clean. In high traffic areas, floors should also be slip-resistant.

**Walls** may be painted wood or drywall, or covered with stainless steel or aluminum. If tile is used, all junctures and seams (as well as junctures between walls, ceilings, and any other panels) should be sealed with an epoxy or silicone grout. The edges of equipment attached to walls should also be sealed. This is an extension of “smooth and easily cleanable”: if dirt can get into cracks and under tiles or panels, the area is not easy to clean. Coving may be used where the floor and walls connect. In all cases where paint is used, it should be light colored, such as a white latex enamel.

**Ceiling** tiles should be non-perforated, smooth, and coated with a material that makes them non-absorbent. Ceiling and wall studs, joists and rafters should not be exposed.

## **6. The Standard: Easily cleanable, Non-absorbent, Durable, Smooth (ENDS)**

The criteria of easily cleanable, non-absorbent, durable and smooth (ENDS) applies to all ceiling, wall and floor materials as well as the surfaces of all equipment, shelving and containers. For example, a storage shelf could be made of stainless steel or wood painted with latex enamel. Raw wood would not meet the criteria since it is absorbent, difficult to clean and not smooth. Shelf paper would not meet the criteria because it is not durable or easy to clean. As shelf paper ages, it curls and retains cuts that may harbor bacterial growth.



## 7. Ventilation

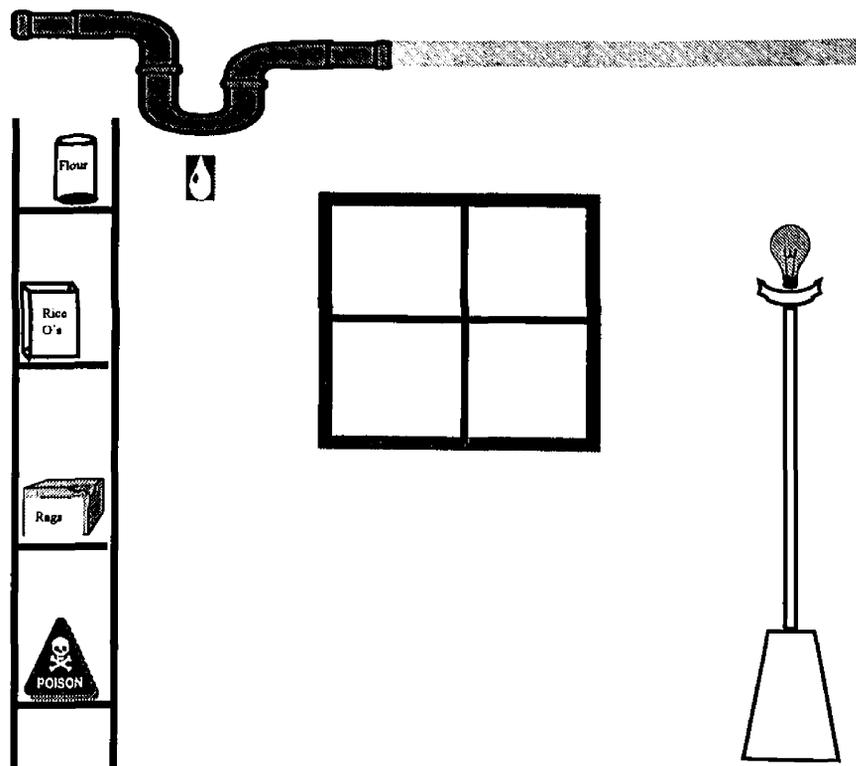
Good ventilation can help control temperature and humidity in your dry storage areas. These controls will in turn reduce bacteria, molds, mustiness and rusting of metal containers.

- ☐ An optimal ventilation system will keep the temperature between 50° and 70° F and the humidity low. This may be accomplished with natural or mechanical ventilation, adequate insulation, and planning.
- ☐ To reduce heat and moisture, storerooms should be away from uninsulated steam and hot water pipes, water heaters, refrigeration condensing units, heaters, and other heat or moisture producing devices.
- ☐ Windows and doors which are part of your ventilation system should be screened and in good repair to discourage insect and rodent entry.
- ☐ Windows which allow dust to enter your building should not be left open.
- ☐ Doors which are used frequently (for delivery or clients) should be on vacuum springs which close automatically to keep unwanted visitors such as dogs, insects and mice out.

## 8. Lighting

 Lighting should be bright enough to maintain clean and safe conditions (at least 20 foot candles).

 Lights over food preparation and storage areas should be shielded to prevent contamination if light bulbs burst. Inexpensive plastic sleeve shields can be obtained from a hardware store.



## 9. Work Space Organization

- Visitors to the kitchen area should be discouraged (clients, kids, dogs, and other beings not essential to your food operation). 
- If smoking is allowed in your food bank, set up a clearly marked smoking area that is away from all food or dish handling areas. Post a sign reminding workers to wash their hands before going back to work. 
- A separate area should also be designated for worker breaks and for storing personal items (coats, purses, employee food, etc.). 
- Repackaging and food preparation should be separated from other food bank operations. If possible, designate a separate room for food handling. This room or area should be close to a hot water source for handwashing and cleaning. If physical separation is not possible, separate the activities by time. Prepare food when the room is not being used for anything else and sanitize all surfaces and equipment before and after working. 
- Garbage cans should be stored away from food handling and storage areas and should be tightly covered and emptied frequently to avoid attracting insects and rodents. 

## 10. Storage Facilities

Food banks in Montana store food for up to 1 year before distribution. Safe food storage facilities are needed to:

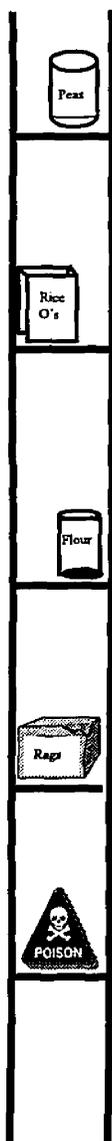
-  keep insects and rodents away from food,
-  discourage bacterial and mold growth,
-  maintain optimal shelf life,
-  ensure that food inventory is rotated so that older supplies are used first, and
-  ensure clean supplies of dishes and single-use items.

Optimal dry storage conditions are:

- Cool** (50° to 70° F.): to prevent product spoilage and bacterial growth. In no case should the temperature drop below 32°F since cans may burst or rust.
- Dry**: to prevent food spoilage, growth of micro-organisms, infection by non-potable water or sewage, and container rust.
- Well-Ventilated**: to maintain a cool, dry area.
- Designed to be cleanable** (see page 8).
- Clean**: to discourage pests and cross contamination.

## 11. Storage Plan

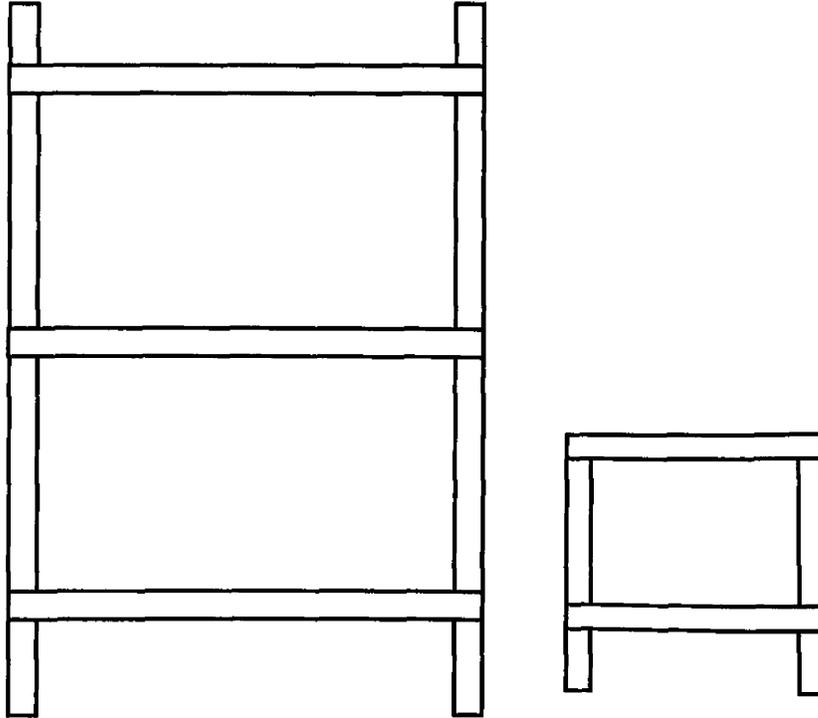
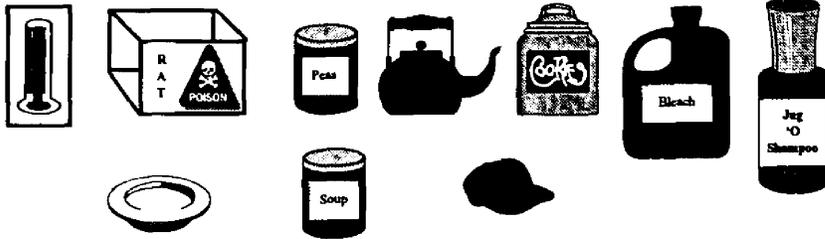
Planning for your storage shelves should take several things into account:



- Free-standing metal shelves are ideal since they can be easily moved for cleaning or inspection.
- All food should be stored at least 6 inches off the floor and at least 2 inches away from the wall to reduce contact with rodents, insects, and water.
- Food should be stored separate from non-food items and above or away from poisons and toxics (such as shampoo, cough syrup or bleach) to reduce risk of spill and contamination.
- Food, dishes, and single use items (paper products) should be stored away from water and sewer lines.
- Shelves should be set up to accommodate storage of individual cans or boxes (instead of shipping cartons) whenever possible. Cartons may harbor pests.
- Garbage and recyclable goods (cardboard, cans, etc.) should be stored away from preparation and storage areas.

## 12. Exercise: Planning Storage

After reading the last several pages, test your knowledge. All of the items pictured below can be stored on or around the sets of shelves. Sketch each item where you think it belongs.



## 13. Equipment

Commercial food preparation equipment (approved by the National Sanitation Foundation, often stainless steel) is designed to pull more heat out of food and to be less easy to break and easier to clean than residential home-style equipment. If you have a choice, obtain new or used commercial refrigerators, freezers and ovens.

Since most food banks operate by donations, however, and since most donated appliances are residential-style, cooling and heating equipment should meet the following criteria.

### A. Refrigerators, Freezers and Ice Machines should be:

- ☞ in good repair,
- ☞ free of leaks,
- ☞ reliable,
- ☞ free of ice build-up,
- ☞ plumbed correctly (air gaps for ice bins and ice machines, direct plumbing connections for refrigerators and freezers), and
- ☞ able to maintain safe temperatures (34° to 40° F for refrigerators, -10° to 0° F for freezers).

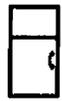
**The effectiveness of food preservation is dependent on maintaining a constant temperature.**

## **B. Refrigerated Storage**

As the temperature drops, bacteria and other microbes lose their ability to multiply. Even below freezing, however, most microbes can lie dormant, waiting for temperatures to rise to begin reproduction. It is therefore important to maintain constant and correct food storage temperatures.



Keep refrigerators at a consistent temperature: between 34° F. and 40° F.



Keep freezers at a consistent temperature: between 0° F. and -10° F.



Place thermometers in the warmest parts of all refrigerators and freezers (often on the top shelf).



Monitor and record temperatures daily.



Occasionally, move the thermometer around to make sure that cooling is even. If not, rearrange the food for better air circulation.

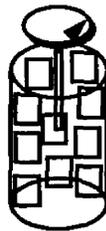
Refrigerators and freezers should be stocked in order to make cooling and air flow more even.

- Allow at least an inch of space at the back and sides of shelves and around items. When food is jammed together, the interiors take longer to cool and may spoil.
- Store all food off the floor of walk-ins.
- A well-packed, full refrigerator or freezer is more efficient because the mass of foods help maintain cool temperatures.

### C. Thermometer Calibration

Because thermometers are bumped even when used correctly, they should be calibrated frequently. A stem probe thermometer can be calibrated by:

- 1.) filling a glass with ice,
- 2.) adding water to form a slush,
- 3.) insert the sensing stem of the thermometer without touching the sides or bottom of the container, and
- 4.) using a small wrench to adjust the calibration nut (on the underside of the indicator) so that the thermometer reads 32° F.



## D. Thermometers

You can't monitor food quality or make good decisions on product safety without information on temperature. Thermometers should be used and placed as follows:



Attach a small metal or plastic thermometer (available at restaurant supply shops) inside each refrigerator where it is easy to read (in plain view).



Place a wall-mounted thermometer at eye level, in plain view, and in the most isolated part of your storeroom (where heat build-up is most likely). A large storeroom may need more than 1 thermometer.



Use stem probe thermometers to measure product temperature and for any activity where food is cooked or kept warm (sample meals, cooking classes, etc.).



Keep a log of temperatures for refrigerators and freezers (daily) and storerooms (weekly).

## E. Cutting Boards

Cutting boards are especially dangerous sources of bacterial contamination. The tiny grooves made by knives hide food and water sources which are perfect for bacterial growth. These grooves can occur on wood, plastic or ceramic cutting boards. Stainless steel cutting surfaces are more impervious but are often not available. To make cutting board use safe:

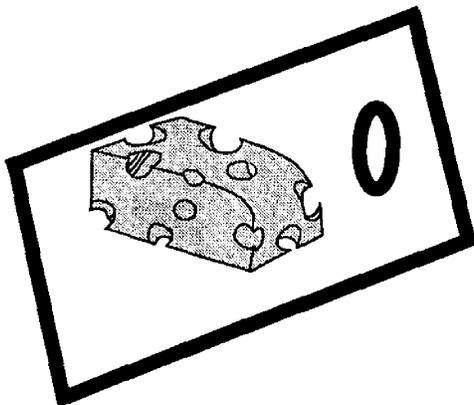


Use separate cutting boards for different types of food. For example, use a yellow cutting board for chicken, a green cutting board for vegetables, etc.



Clean cutting boards after each use by:

- ♦ scrubbing in hot, soapy water,
- ♦ rinsing,
- ♦ dipping in a sanitizer solution of 1 - 2 tsp. of bleach per gallon of water (100 ppm chlorine), and
- ♦ allowing the board to air dry.



## F. Dishwashing equipment should be either:

- ⊗ a 3-compartment sink (to wash, rinse, and sanitize), or
- ⊗ a dishwasher with a 180° F final rinse or chlorination capacity (50 ppm residual chlorine).

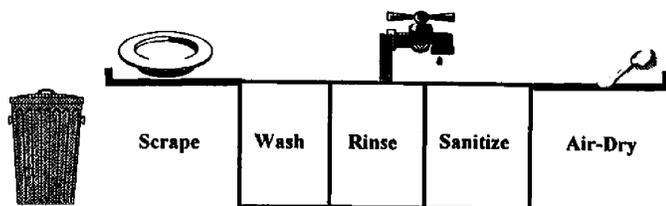
Dishwashing procedure is explained on page 21.

## G. Sinks

Food bank facilities should include dish sinks, food preparation sinks and handwash sinks.

Handwashing sinks should not be used for washing food or dishes. Combining these uses dramatically increases the potential for contamination and often leaves the handwashing sink unavailable. Dish and food preparation sinks can be combined, however, if they are sanitized in between uses.

Handwashing sinks should be placed in each room in which food handling occurs. All re-packaging and food preparation areas should have a handwash sink.



## 14. Dishwashing Process

Dishes may be washed manually (in a 3-compartment sink) or with a dishwasher.

### A. Manual Washing

- 1) **Scrape and pre-rinse** dishes. Soak only if absolutely necessary. (Soaking allows time, temperature and water for bacterial build-up.)
- 2) **Prepare** all dishwashing sinks by washing, rinsing, and disinfecting them.
- 3) **Wash** dishes in hot, soapy water (120° F.). Follow label directions when adding soap — adding too much could make your sanitizer ineffective. Change the wash water as often as it becomes cold or dirty.
- 4) **Rinse** in clean hot water (120° F.). Change rinse water when it becomes cold, soapy or cloudy.
- 5) **Sanitize** dishes by immersion for at least 30 seconds in very hot water (170°F) or for 1 minute in lukewarm water (75° F) with 50 ppm chlorine. 50 ppm chlorine is approximately equal to 1 tsp. new bleach per gallon of water.
- 6) **Air Dry** dishes, then store them in a clean area.

### B. Dishwashers

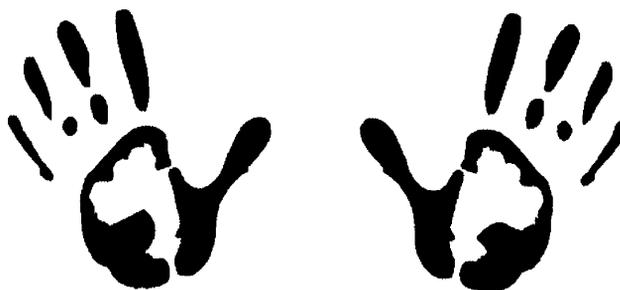
Dishwashers may be used in place of steps 2 through 6 above. Dishwashers must reach 180° F in the final rinse or must leave a residual of 50 ppm chlorine on the dishes.

## 15. Handwashing Facilities

Unclean employee practices are the culprit in many food-borne illnesses (such as hepatitis).

**Don't underestimate the importance of safe and adequate handwashing facilities! Handwashing is not an option — it is absolutely required.**

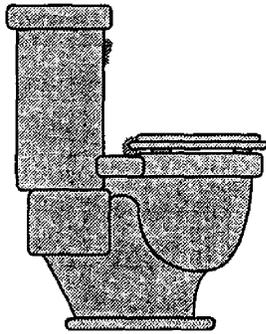
- ◆ Handwashing sinks should be located in a place that is convenient to all food preparation activities. Depending on the size, number and design of your food preparation areas, you may need more than one designated handwash sink.
- ◆ Handwashing sinks must have hot and cold water and a mixing faucet.
- ◆ Handwashing sinks should not be combined with food or dish sinks.
- ◆ Handwashing sinks should have paper towels (in a dispenser or on a mounted roll holder). Paper towels should be used rather than cloth towels; cloth towels can spread bacteria.
- ◆ Anti-bacterial soap (the orange colored soap available at department or grocery stores) should be kept in dispensers at every handwash sink.



## 16. Bathrooms

All bathrooms should be supplied with the following items:

- ◆ sinks with mixing faucets,
- ◆ hot and cold water,
- ◆ paper towels (hung in a dispenser or roll holder),
- ◆ anti-bacterial soap in a dispenser,
- ◆ a sign reminding workers to wash their hands before returning to work, and
- ◆ toilets which are sealed to the floor with a line of caulk to facilitate cleaning.



All women's (or joint) restrooms must have:

- ◆ covered wastecans or a sanitary napkin disposal box.

## 17. Cleaning Methods

A clean, sanitary food preparation and storage environment is critical to food safety. Sanitizing is an important part of cleaning (see page 25).



Work surfaces such as counters and sinks should be washed with hot, soapy water then rinsed and sanitized frequently. Sinks used for washing both food and dishes should be cleaned between uses by washing, rinsing, spraying or soaking in a 100 ppm chlorine solution, and air drying for at least 3 minutes.



A bucket of sanitizer (100 ppm chlorine) with rags should be supplied for every work area that is in use. The rags must stay in the sanitizer between use.



**Soap should never be added to sanitizer since it forms a film and blocks the disinfecting action of chlorine.**



Floors may be disinfected by using 2-1/4 cups of bleach and 3 gallons of warm water. Allow floors to air dry. Mop water should be emptied between each use and the mop should be hung to dry.



All linens should be machine washed in hot water and disinfected following the directions on the bottle of bleach whenever dirty. Dish cloths and towels are notorious sources of contamination. A fresh dishcloth should be used each day.

## 18. Sanitizers

Several different types of sanitizers are effective in stopping bacterial growth. Of these, regular chlorine bleach is the least expensive and most readily available. (Make sure that the bleach contains chlorine; some color-safe bleaches do not.)



When sanitizing counters and appliance surfaces, a bleach solution should be at 100 parts per million (ppm) or approximately 1 tablespoon of bleach per gallon of water. Dishes and utensils should be sanitized at 50 ppm or approximately 1 teaspoon of bleach per gallon of water. These concentrations are important since they allow the chlorine to disinfect the surface, then evaporate leaving little residue. Too much chlorine residue on a dish or utensil can cause chemical poisoning.

Because bleach in a bottle gradually loses strength as it ages, the amount of bleach required to reach the correct concentration may vary. To correctly determine the concentration of a sanitizer solution, use chlorine test strips (available at restaurant supply shops). The strips turn different shades of gray at different concentrations:



10 ppm



50 ppm



100 ppm



200 ppm

Surfaces cleaned with bleach must be air dried to give the chlorine time to work and to prevent re-contamination.

## 19. Cleaning Frequency

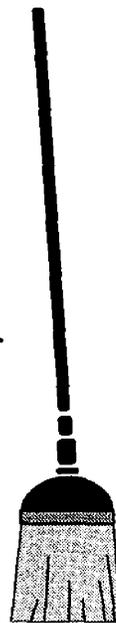
Cleanliness is the first step in keeping foods free of bacterial contamination. Making a cleaning schedule and having one person responsible for this schedule increases cleaning effectiveness. After discussing it with workers, post the schedule and make sure that all necessary cleaning supplies are available.

<u>Task</u>	<u>Day</u>	<u>Worker</u>	<u>Completed</u>
1.) Sweep	Mon	Gene	X
2.) Mop	Mon	Gene	

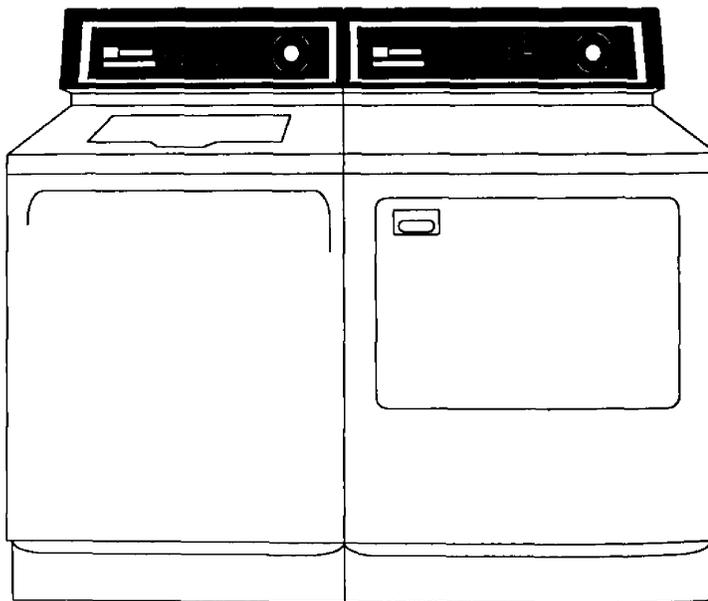
Cleaning frequency at your food bank will depend on how often and for what purposes you use the facility. The following guidelines apply to all Montana food banks.

1. Food processing equipment such as meat slicers, grinders, and can openers should be disassembled if necessary and thoroughly cleaned and sanitized after each use.
2. Clean repackaging or food processing areas before and after use. Clean counters and cutting boards between each type of food. All counters should be sanitized at least daily.
3. Dish rags should be replaced daily and should be used for only one purpose. Never use the same cloth to clean dishes and counters or chairs or floors. Scrubbers and brushes should be replaced often.

4. Utensil and food drawers should be cleaned at least every two months.
5. Refrigerator and walk-in surfaces should be cleaned with hot, soapy water periodically; spills should be cleaned immediately. If heavily used, refrigerators should be cleaned monthly.
6. Defrost freezers and refrigerators as often as necessary to prevent ice build-up. When defrosting, sanitize appliances with 100 ppm chlorine and allow to air dry. See page 25, on sanitizers, to determine the correct sanitizer concentration.
7. Walk-in refrigerators (including floors) should be cleaned as in #6. Cooling unit fans should be cleaned frequently to maximize cooling efficiency and to keep dust from blowing over food.
8. Floors should be swept after each day of use and mopped when necessary. Floors should be sanitized at least weekly.
9. All spills should be cleaned immediately.
10. Dry storage shelves should be dusted and washed as often as necessary to keep them free of crumbs, dust and food particles. At least every 6 months, storage areas should be thoroughly cleaned, sanitized and inspected (for signs of pests, spoiled food, etc.).



11. Mop water should be changed whenever dirty and emptied between each use. Mops should be hung to dry.
12. Garbage cans should be fitted with tight lids which are replaced after each use. They should be emptied daily and cleaned and sanitized weekly.
13. If used often, bathrooms may need to be cleaned daily or every other day.



## 20. Pest Control

Pests can cause extensive damage to food supplies and, once established, can be difficult to remove. An active pest control program is recommended for all food banks. This includes:

- ⌘ storage of food in covered containers, off floors and out of cardboard shipping boxes.
- ⌘ closing off passageways between the food bank and outdoors. This may be accomplished using caulking, putty, insulation and window screening.
- ⌘ regular cleaning and building maintenance to remove entry routes and attractive sources of food and water such as food containers, garbage and recyclables.
- ⌘ a pest control log and preventative pest control measures (such as fly strips, glue boards or traps beneath shelving units and at the perimeters of food preparation areas.
- ⌘ emergency pest control plans for infestations, such as an agreement with your local pest control specialist. Pesticides used in the food bank must be approved by USDA or EPA for use with commercial food establishments (check the bottle or can for this label). If much poison is applied, food should be removed from the room to be treated and shelves, counters and equipment should be thoroughly cleaned before food is replaced.

## 21. Common Pests and Recommended Treatments



**Cockroaches:** may enter the food bank through shipments of vegetables from warmer climates or through cardboard shipping containers. Although keeping the area clean and restricting the use of cardboard will help control cockroach populations, insecticide is usually needed to get rid of cockroaches.



**Mites and weevils:** may enter the food bank in grain products such as flour and cereal. If you discover an infected package, throw it away immediately and clean and sanitize the area. Storing grain products in plastic containers with lids (individual or trash can size with food grade liners) will help deter mites and weevils.



**Rodents:** often enter the food bank through holes and cracks in the foundation or walls of the building. Spring traps, baited with peanut butter or similar strongly scented food, work well to control mice. Poisons should be used only if rodent populations are out of control. (Poisons are not considered sanitary since mice crawl off to die in difficult to reach places.)

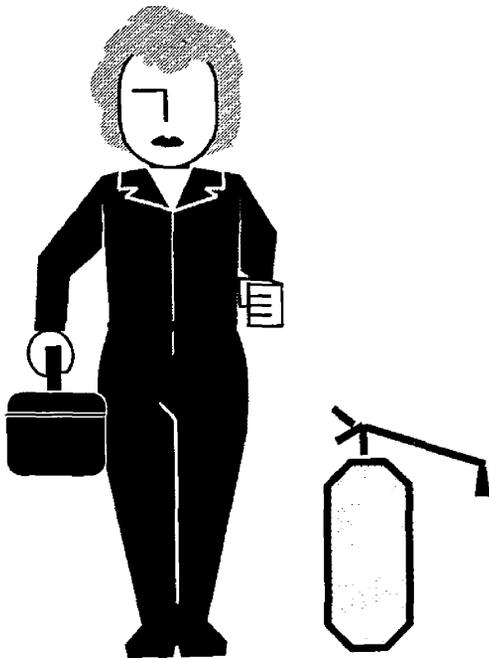


**Flies and Ants:** can be persistent during warm weather, and can leave imported bacteria and feces on food contact surfaces.

Flies and ants enter the building through cracks and holes. The first step in controlling these insects is sealing the building with caulk, putty, insulation and window screens.

**Flies:** Small numbers may be controlled with a fly swatter if you immediately sanitize the area where you swat. Place any bug lights or fly strips away from food preparation and storage areas.

**Ants:** may require pesticides for entry ways and outside hills.



## 22. Self Test

1. To reduce heat and moisture, storerooms should be away from:
  - a. uninsulated steam and hot water pipes.
  - b. heaters or water heaters.
  - c. refrigeration condensing units.
  - d. all of the above.
2. A fresh dish rag should be used:
  - a. every day.
  - b. every other day.
  - c. whenever the old one appears dirty.
3. Light "shields" are used to:
  - a. reduce the glare from florescent lights.
  - b. prevent contamination if light bulbs burst.
  - c. reduce the amount of heat generated by lights.
  - d. prevent contamination by insects.
4. Dishwashing steps include:
  - a. washing, rinsing and drying.
  - b. washing, rinsing, and sanitizing.
  - c. scraping, washing, rinsing, sanitizing and air-drying.
5. Handwashing sinks should be located near:
  - a. the entry door.
  - b. re-packaging operations.
  - c. food preparation areas.
  - d. b and c.
6. Which of the following should be found in the kitchen:
  - a. clients
  - b. kids
  - c. dogs
  - d. none of the above
7. The optimal temperature for refrigerators is:
  - a. 0 to 32° F.
  - b. 34 to 40° F.
  - c. 40 to 45° F.
  - d. anything above 32° F.

# *Safe Aid*

## **Section E**

### **Booklet 3: Risk Management**

# SAFE AID

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## Food Safety Training Program for Food Banks



**Booklet 3**

**RISK MANAGEMENT**

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## 1. Is Risk Management Necessary?

Donations provide the majority of food for most food banks. This allows food banks to fill an important need in the community. It also creates a problem, however, since food banks have no control of food quality before it comes through their door.

This problem makes two things important:

1. Food banks must have a good risk management program. This booklet will explain how to perform risk assessment.

**Definition: Risk management as discussed in this booklet is the evaluation of food safety.**

2. Food banks must have even better quality control measures than would normally be expected of a commercial food establishment. Booklet 4, gives details on safe food handling.

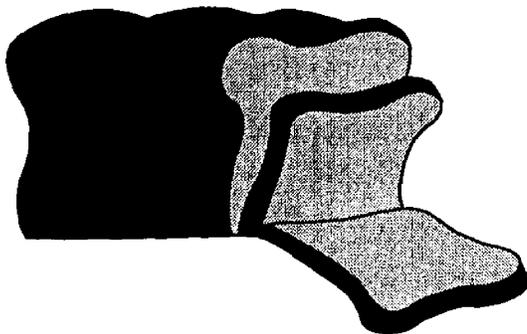
Food packaging is designed to protect food. Contamination occurs when damaged or opened packages expose food to bacteria, viruses, molds, insects, rodent droppings and urine, cleaning products and other toxics, broken glass, contaminated water or sewage, etc. The assessment protocol on the following pages focuses on container integrity, the possibility of

contamination and any signs of infestation.

Risk assessment deals with food safety, not food quality. Quality standards should be set up in addition to the safety standards contained in this booklet. For example, moldy bread is not safe and should be discarded. Stale bread, however, is safe but may not taste good. Whether or not you keep stale bread will depend on the size of your bread supply and your clients' demand for bread.

The degree of inspection should differ depending on the source. Food that you purchase may require only minimal inspection. Inspection of donated food will be much more intensive.

After reading this booklet, if you still have questions about whether or not a donation should be accepted, there are several resources available to you. The *Safe Aid Training Manual* lists the County Extension Agents and County Sanitarians for each county, the MSU Extension Service Food and Nutrition Specialist, and the State Food and Consumer Safety Bureau. The *Training Manual* also contains a sample checklist for risk assessment.



## 2. General Principles

Several general principles apply when determining whether to keep donated food. Three important things to remember are:

- Use your eyes and nose as first-round guides. If food looks or smells suspicious (if you have any doubts at all), throw it out. Spoiled food may be slimy, off-color or moldy.



- Remember, however, that not all spoiled foods will smell or look bad. That's why the protocol in the rest of this book is so important.

- Never taste a donated product to determine food safety! Remember, you can't see microorganisms. The amount of *Clostridium botulinum* that would fit on the head of a pin can kill you.



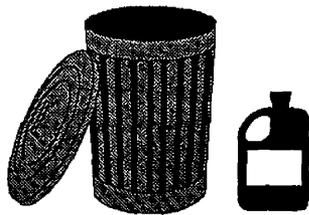
- Foods should always be sorted (using the risk analysis principles in this booklet) before being put into storage. Do not store unsorted food near sorted food where it may be mistakenly used.

### 3. Assessment Process

A. First, discard the food in any obviously damaged packages in a safe manner (denatured and discarded in trash or sewage). This includes:

- ☑ packages with tears
- ☑ bottles with popped safety seals,
- ☑ jars that have been opened,
- ☑ medicine containers without safety strips,
- ☑ leaking containers,
- ☑ packages with insect or rodent holes,
- ☑ stained paper and cardboard packages, or packages that smell of a foreign material,
- ☑ products with missing or opened seals,
- ☑ any item which has been opened before it arrived at the food bank and
- ☑ unlabelled or illegally labelled products.

**More specific information on assessing damaged containers begins on page 10 of this booklet.**



**Denaturing:** Rejected food may either be donated to pig farmers or local composting groups or denatured (doused with ivory soap or bleach) so that it won't be re-salvaged from your garbage can and reused.

B. Then, separate remaining items into groups such as:



human food



pet food



cleaning products



medicines or cosmetics

C. Separate each group into package types such as:

- ◆ bags and boxes
- ◆ bottles and jars
- ◆ cans



D. Decide if food products are to be kept according to the guidelines for that type of package in this booklet:

- Cans, page 10
- Bottles, page 15
- Boxes and bags, page 18
- Refrigerated and frozen food, page 21

E. Mark the date received on all cases of product and on all undated individual items so that you can maintain product rotation and keep food only for a safe period of time.

F. If labels are damaged or dirty, re-label the product with the following information (using masking tape or self-adhesive labels and a permanent marker):

1. manufacturer,
2. product,
3. ingredients,
4. weight, and
5. expiration date (if the product doesn't have one, assign one of your own using the keep date guidelines on pages 23-31).

G. Finally, clean any products that are not contaminated but dirty. Cans, bottle and jars may be cleaned by:

- 1.) wiping with a clean, soapy rag,
- 2.) wiping with a rinsing rag, and
- 3.) wiping with disinfectant (100 ppm chlorine, as explained in booklet 2).

Be careful not to submerge screw-type closures.

### **Donation Diplomacy:**

To maintain good public relations, be diplomatic about donations. Sort out rejectable items such as home-canned goods after the donor has left.

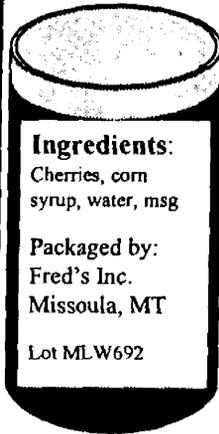
#### 4. IT'S ALL ON THE LABEL...

Labels provide valuable clues to the usefulness of donated food. For example:



**Weight.** A can that is significantly lighter than the advertised weight may have been compromised (ex. punctured and leaked).

**Ingredients.** Ingredients are critical after an item has been stocked to check against a client's food allergies.



**Source.** State regulations require labels to include the packager's address. All food should come from a licensed, inspected source.

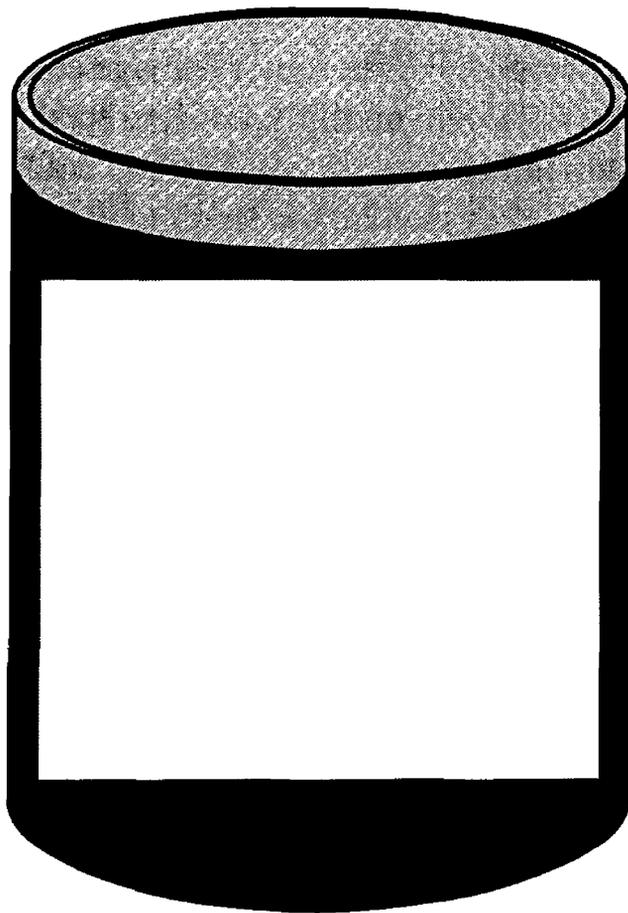
**Lot Numbers.** Lot numbers are important tracking devices for food recalls (when a batch has been contaminated).



**Product Age.** Age is important in determining how long you may safely keep a product.

## 5. Exercise: Designing a Label

A local food bank uses a commercial canning facility on weekends to can fresh carrots received in bulk from California. How would you design a label for the carrots?



## 6. Evaluating Cans

Canning preserves food by heating it to temperatures that destroy harmful microorganisms and spores. After food has been heated, it is sealed into airless containers to prevent exposure to bacteria on the outsides of the containers. Since most micro-organisms need oxygen to live, the sealed containers also prevent growth of any micro-organisms inadvertently left in the containers. Using this method, food can be stored for long periods of time.

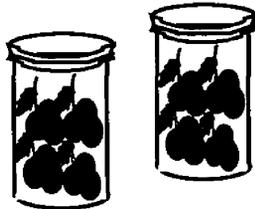
Containers with even minor damage can allow bacteria to enter and multiply, causing food to spoil. Remember, bacteria are tiny and could easily enter holes that are too small to see. Because of this, cans with certain types of dents are considered unsafe.

*Clostridium botulinum* bacteria can grow without air. Although botulism is most likely to occur in foods that have little natural acid, any can that bulges or moves easily on the ends should be discarded. (The bulging is caused by gas, which *C. botulinum* leaves as a waste product).

Because home-canned foods have so much potential to cause food-borne illness, food banks can only accept commercially-canned foods.

The following types of cans are unsafe and should be refused or discarded.

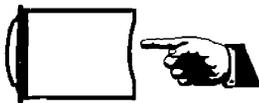
A. Home-canned goods. (You have no way of knowing if home canned foods have been properly handled.)



B. Cans with swollen or bulged ends (except carbonated beverages where bulged ends are normal).



C. Cans with ends which flip, indicating internal pressure. (Press firmly on the top of the can; if you can move it, or if the opposite end bulges, throw it out.)



D. Cans with sharp dents, points or severe creasing anywhere (especially on side or end seams).



E. Cans with any dents at the juncture of side or end seams.



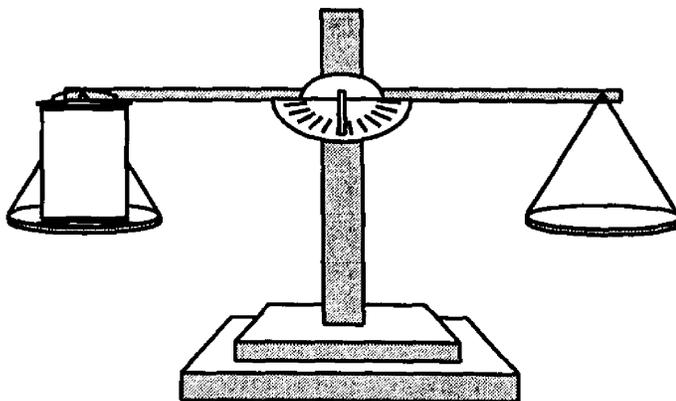
F. Cans that are so badly dented that they can't be stacked or opened by a manual can opener.



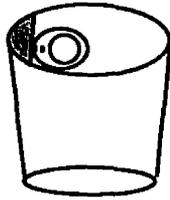
G. Cans that have excessive or pitted rust (rust that won't rub off).



H. Cans with obvious leaks or cans that are light in weight. (For example, if a carbonated beverage can is soft and easy to compress, it has lost its carbonation and should be rejected.)

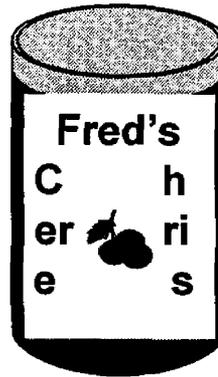


I. Cans with pop-up seals that have been popped up (accept only if the seal is intact).



J. Cans with no labels or labels missing any of the following components:

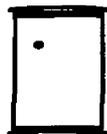
- 1.) product name,
- 2.) ingredients,
- 3.) net weight, or
- 4.) name and address of manufacturer.



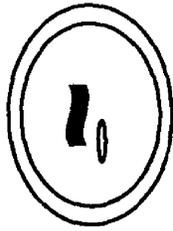
K. Discolored cases or cans which cannot be cleaned (indicating contamination from a spill).



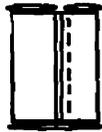
L. Cans with holes, pinholes, pits, cracks, fractures or punctures.



M. Cans with buckled or pinched tops.



N. Cans with improperly formed seams (incomplete, blown-out or miswelded).



O. Cans with misformed rims or loose tops.

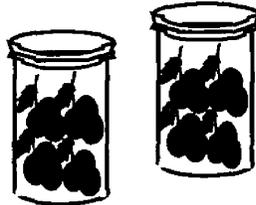


It is important to inform your clients to avoid cans that spurt liquid or have an off-odor when opened.

## 8. Evaluating Bottles and Jars

The following types of bottles and jars should be rejected.

A. Any home-canned products.



B. Clear liquids which have turned milky.



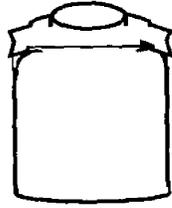
C. Cracked jars or bottles showing any sign of leakage.



D. Loose lids with no safety seal. (Check by tightening the lid; if it moves more than a fraction, reject it. If the lid to a jar or bottle is cracked or broken, open the jar or bottle. If it has an inner seal, and that seal is intact, replace the lid. If the jar or bottle does not have an inner seal, or if the inner seal is compromised, dispose of product.)



E. Jars or bottles on which the safety button is up.  
(This is especially important if the product requires refrigeration after opening).



F. Jars or bottles which are missing any contents.



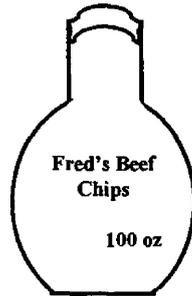
G. Any jar or bottle which includes a foreign substance such as dirt, mold, webs or insect skins under the lid. (Hold glass containers to a light. If foreign objects, mold, discoloration or unusual product separation is present, discard the product. Some products, such as salad dressings, contain an oil that may cause normal product separation. Mold is often present in fruit juice. It may appear long, stringy, ropy or clumpy.)



H. Containers with chipped necks and threads  
(glass could break off into product.)



I. Any bottle or jar that has an incomplete, illegible or missing label.



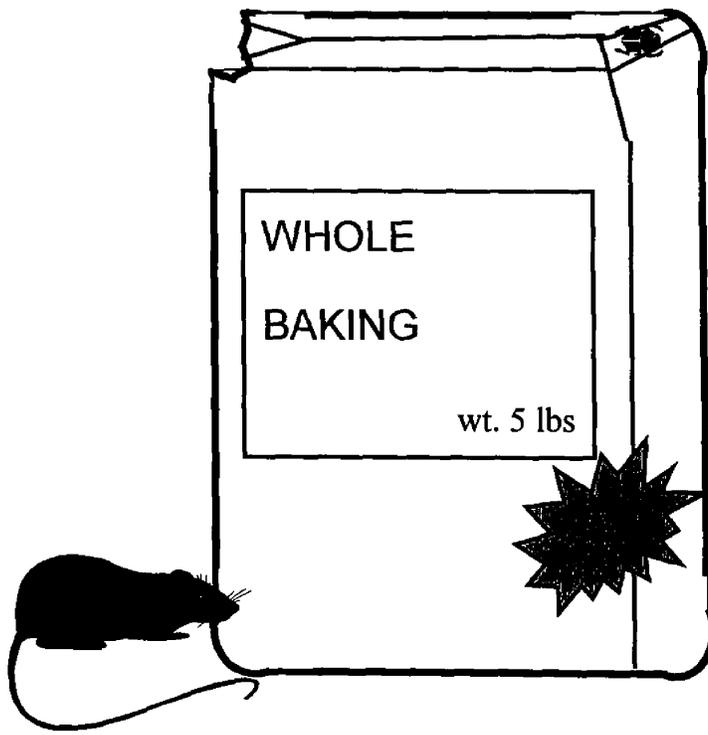
J. Any product that is discolored, indicating advanced age or contamination. Mold is especially present in fruit juice and may be seen as stringy, rope-like growths.



## 9. Evaluating Cardboard or Paper Packages

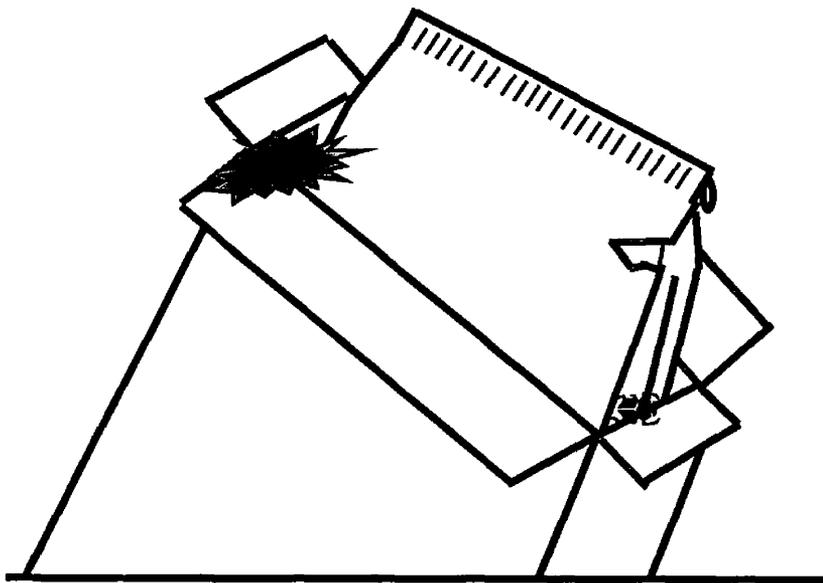
### A. Single-layer Packages should be discarded if:

1. it has rips, tears, holes or open corners.
2. product had leaked out.
3. significant taped repairs were made prior to arrival at food bank.
4. it has been contaminated by other products (stains, odors, etc.).
5. rodent gnaw marks, droppings or urine are present or can be seen with a black light.
6. the package includes insect bore holes, insects in package seams, movement or spots in the product, insect skins or chaff in the bottom of the container.



**B. Boxes with an Inner Bag** should be accepted only if:

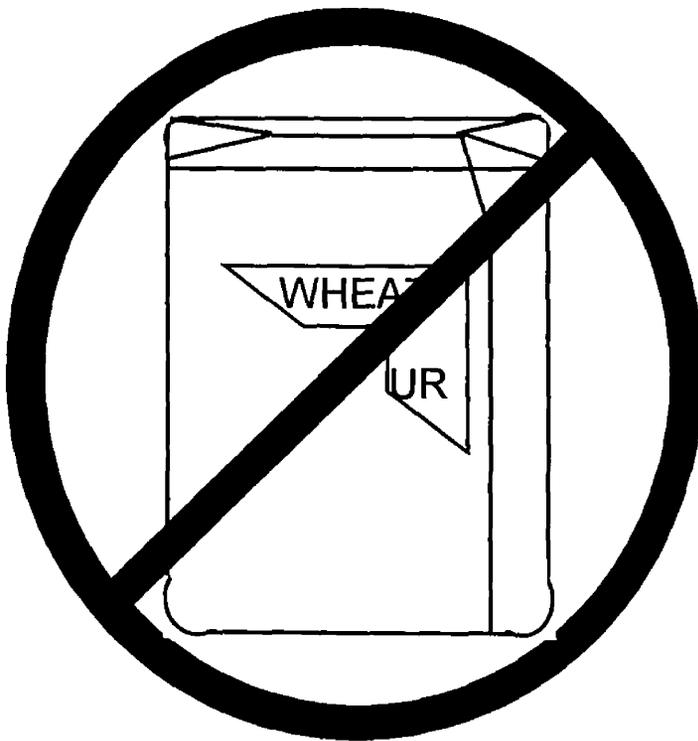
1. the inner bag is undamaged and has an air tight seal and well-formed seams.
2. the package is not stained and does not contain foreign material.



- ◆ If the inner package is in good repair, you may repair the outer package with tape.
- ◆ If the outer package is too damaged to repair, place the inner bag into a new plastic bag, insert the label and seal.

**C. All Packages must have:**

A. complete and legible labels.



## 10. Evaluating Refrigerated and Frozen Food Containers

In assessing products which require refrigeration, use the following guidelines.

- A. Discard any refrigerated or frozen product that is not refrigerated or frozen when you receive it.
- B. Discard any packages which have violated the manufacturer's instructions.
- C. Keep refrigerated products refrigerated and frozen products frozen during assessment and storage.



## 11. Exercise: Risk Assessment

Using what you've learned from the last several pages, would you keep or discard the following packages?

Keep   Discard

1. A jar of Aunt Jane's home-canned green beans
2. A jar of mayonnaise with a small crack
3. A sack of flour with small, irregular holes around the base.
4. A can of nacho cheese with a slight dent located away from seams
5. A jar of peanut butter with a cracked lid and safety seal intact
6. Commercially canned peas with bulging ends
7. A half-full bottle of salad dressing
8. A box of cereal with a torn box and intact liner.
9. A can with no label

## 12. Storage Times, General Information

The following pages give general recommendations on how long food can safely be stored at your food bank. The suggested time limits deal only with food safety, not with how appetizing the food may be.

The life length of any product has a lot to do with how the product is handled and stored (before, during and after it is in the food bank). Recommended dates (in the following charts or on the product “use by” date) may not be accurate if foods have been stored at the wrong temperature.

If foods have been consistently stored at correct temperatures, they may be safe well after the “use by” date printed on the product. The dates in the following charts can be used to determine how long you can keep products after:

- A.) you receive them, or
- B.) the printed “use by” date (if you cannot understand the date code, label the product with the date you received it).

When determining how long to keep food, always be alert for mold, discoloration, slime and damaged packaging. These are sure signs that the food should be discarded. Also be aware the the nutrient content of fresh or packaged food decreases over time.

### 13. SHELF STORAGE GUIDE

FOOD	Maximum Storage Time at 50-70° F
Baking Powder	24 months
Baking Soda	36 months
Baby food	
formula	12 month
jars	12 month
Beans, Peas, Lentils, dried	36 months
Bottled foods	36 month
Bouillon cubes, envelopes	12 month
Bread, fresh*	2 weeks
Bread Crumbs, dry (sealed)*	6 months
Cakes, donuts	2-10 days
Canned Goods, general	24-36 months
Catsup, chili sauce	
opened	1 month
Cereal Grains, whole	
cornmeal or grits*	12 months
oatmeal	18 months
barley, etc.	36 months
Cereals	
cold-type	
boxes, unopened	12-18 months
boxes, opened	2-3 months
repackaged	12 months
hot type	8 months
unopened	18 months
repackaged	12 months
individually packaged (ex. instant)	18 months
Cheese, Grated Parmesan	10 months
opened*	1-2 months
Chocolate	
dark*	18 months
milk chocolate*	12 months
semisweet	18 months
unsweetened	18 months
syrup	24 months

syrup, opened*	12 months
cocoa and cocoa mixes	24 months
Coconut	18 months
Coffee	
regular or instant, unopened	18 months
regular, opened*	12-18 months
instant, opened*	24-36 months
Coffee Lighteners, powder	18 months
opened	6 months
Condiments	
ketchup, mustard, relish, mayonnaise,	12 months
opened or repackaged condiments	6 months
sauces: hot pepper, worchestershire,	
steak and meat sauces	24 months
opened or repackaged sauces	12 months
Cookies	
bakery	1-2 weeks
packaged	12 months
packaged, opened	1 month
Cornstarch	24 months
Crackers	12 months
opened	2 month
Diet Products, instant breakfasts	12 months
Dressings	
mixes	36 months
prepared, dairy-based	18 months
prepared, other	36 months
prepared or mix, opened*	3 months
Dry goods, general	18 months past date
Flour	
white	18 months
whole wheat*, rye*	12 months
Frosting	
canned	12 months
mix	18 months
Fruit and Juice	
citrus, canned**	12 months
other, canned**	36 months
dried*	24 months

Gelatin	
flavored	18 months
unflavored	36 months
Honey	36 months
Jellies, Jams**	36 month
Meat and Fish	
canned	36 months
canned ham*	18 months
Milk**	
condensed, evaporated*	12 months
nonfat, dry	24 months
nonfat, dry, opened*	9 months
condensed or dry, hydrated**	5 days
Mixes	
casserole, gravy, soup, pancakes, biscuits, cookies, cakes, muffins, pie crust, puddings, soup, rice, pancake, potato, etc.	12-18 months
drinks (kool-aid, lemonade)	18 months
Molasses	36 months
Nuts	
canned	24-36 months
in shell or packaged	6 months
canned or packages, opened*	3 months
Oils and Shortening	36 months
opened*	6 months
Pasta	
spaghetti and macaroni	36 months
egg noodles	24 months
Peanut Butter	24 months
opened*	3 months
Pectin, liquid or powdered	24 months
Pickles, olives	24 months
Pies and pastries, packaged	
custard-style**	
Other	3-10 days
Popcorn and Chips	
unpopped popcorn	36 months
popped popcorn and chips	6 months

popcorn and chips, opened or repackaged	1 month
Rice	
white	24 months
brown*	3 months
flavored or herb	6 months
Seasonings	
herbs and spices	36 months
pepper, salt	36 months
vanilla and other extracts	24 months
vanilla and other extracts, opened	12 months
Soft Drinks	12 months.
Soup, canned	
tomato or tomato based	12 months
other	24 months
Snacks	
bagged	6 months
canned	36 months
Sugars	
white	36 months
artificial sweetener	36 months
brown, confectioners	24 months
Syrups	
corn, maple, berry, etc., unopened	24 months
corn syrup, opened*	6 months
maple syrup, opened*	12 months
Tea	
bags, box	36 months
instant, jar	36 months
Toaster pop-ups	3 months
Vegetables	
canned or dried, general	36 months
tomatoes & sauerkraut, canned	18 months
fresh	
onions or potatoes	8 months
squash, hard-shelled	8 months
Vinegar	24 months

\* Store in refrigerator for best quality or longer storage time

\*\* Must be refrigerated after opening

\*\*\* Unless otherwise specified, these are the MAXIMUM recommended storage times for unopened packages.

## 14. REFRIGERATOR/FREEZER STORAGE GUIDE

FOOD	STORAGE TIME	
	In Refrig. (34-40°F)	In Freezer (0°F)
<b>Baked Goods</b>		
cakes		6 months
cheesecake	5 days	1 months
cookies	12 months	
custard-filled pastries	2-3 days	NR*
donuts		6 months
fruit cake	12 months	
pie, pastries		6 months
pie shell, unbaked		6 months
quick bread, cakes		4 months
yeast bread, rolls		6 months
<b>Bread</b>		
fresh	1 month	12 month
frozen dough		6 months
Butter	6 weeks	12 month
<b>Cheese</b>		
<b>Soft</b>		
cottage cheese	2 weeks	NR
ricotta	2 weeks	6 month
cream	3 weeks	4 month
<b>Hard</b>		
Swiss, Cheddar, etc.		6 month
unopened	6 month	
opened	1 month	
chunks, opened	1 month	
slices	2 weeks	
Parmesan/Romano	12 months	
Cream	7 days	NR
<b>Eggs</b>		
in shell	6 weeks	NR
whites, yolks	3 days	12 months

Fish		
uncooked	2 days	6 months
cooked	2 days	3 months
Frozen Deserts (ice cream, etc.)		6 months
Fruits		
Fresh		
blueberries, cherries	1-2 weeks	24 months
strawberries	7 days	24 months
bananas	1-2 weeks	
apples, cranberries,	8 months	24 month
melons and pears	2 weeks	24 month
avocados, grapes, peaches	2 months	
citrus fruit (grapefruit,	2 months	6 month
tangerines, oranges,		
lemons, limes)		
other fruit	2-4 week	12 month
canned, opened	1 week	NR
Game meat		
deer	3-5 days	18 months
rabbit	3-5 days	12 month
duck & goose (whole, wild)	3-5 days	6 month
Jellies, Jams		
repackaged or opened	6 months	NR
Juices	1 week	30 months
Margarine	12 month	30 month
Mayonnaise		
repackaged or opened	3 month	NR
Meat (beef, pork, lamb)		
fresh		
chops, roasts, steaks	3-5 days	24 months
ground, stew or variety	1-2 days	12 months
cooked meat & meat dishes	5 days	6 months
gravy & meat broth	5 days	6 months
cured		
bacon, frankfurter, etc.,	14 days	6 month
(unopened)		
bacon, frankfurter (opened)	7-10 days	NR
sausage, fresh/smoked	3-5 days	6 months

canned ham, unopened	6-9 month	NR
canned ham, opened	3-5 days	3 months
casseroles, mixed dishes	3-5 days	6 months
dried		12 months
processed, packaged		
lunch meat, unopened,	25 days	6 months
vacuum-packed		
lunch meat, unopened	14 days	6 months
non vacuum-packed		
hot dogs	2 months	12 months
ham	1 week	6 months
sausage, fresh pork	1 week	6 months
variety (liver, etc.)	2 days	6 months
Milk, fluid	10 days	3 month
buttermilk	14 days	3 month
Nuts (shelled or unshelled)	6-12 month.	18-24
month.		
Poultry		
fresh (whole chicken & turkey)	3-5 days	12 months
fresh (chicken pieces)	2-3 days	9 months
fresh (turkey pieces)	2-3 days	9 months
duck & goose (whole)	3-5 days	6 month
giblets	2-3 days	4 month
cooked, covered w/ broth	2 days	6 months
or gravy		
pieces not in broth or gravy	3-4 days	6 months
casseroles, mixed dishes	3-4 days	6 months
fried chicken	3-4 days	6 months
Seafood		
fish steaks and fillets	1-2 days	6 months
shellfish	1-2 days	6 months
Sour Cream	3 weeks	NR
T.V. Dinners & main dishes	2 days	6 months
Tofu	7 days	4 months
Vegetables, fresh		
carrots, Jerusalem artichokes	3 months	
sweet potatoes, cabbage	8 months	
uncut squash	12 months	

asparagus, cauliflower, mushrooms, green peppers, tomatoes, broccoli, green beans, green peas, spinach, cut squash	4 weeks	
lima beans, lettuce, cucumbers	1-3 weeks	
sweet corn, egg plant, ripe	7-14 days	
salad greens	1-2 wks	
Vegetables, canned, opened	5-7 days	NR
frozen, commercial		24 month
Yogurt	2-3 weeks	NR

\* NR = not recommended because it leads to a poor quality product

## 15. Self Test

A. How long could you keep a bottle of Ranch Dressing that is already 2 months past its expiration date?

- |              |              |
|--------------|--------------|
| 1. 18 months | 2. 12 months |
| 3. 16 months | 4. 36 months |

B. What senses should you use to examine food?

- |          |          |
|----------|----------|
| 1. taste | 2. smell |
| 3. sound | 4. sight |

C. Which of the following are signs that a product should be discarded?

- |                  |                     |
|------------------|---------------------|
| 1. mold          | 2. slime            |
| 3. discoloration | 4. all of the above |

D. Which of the following bread conditions are safety concerns?

- |              |            |
|--------------|------------|
| 1. moldy     | 2. stale   |
| 3. flattened | 4. crumbly |

E. Which of the following materials can be used to denature food?

- |               |           |
|---------------|-----------|
| 1. ivory soap | 2. bleach |
| 3. hot water  |           |

# *Safe Aid*

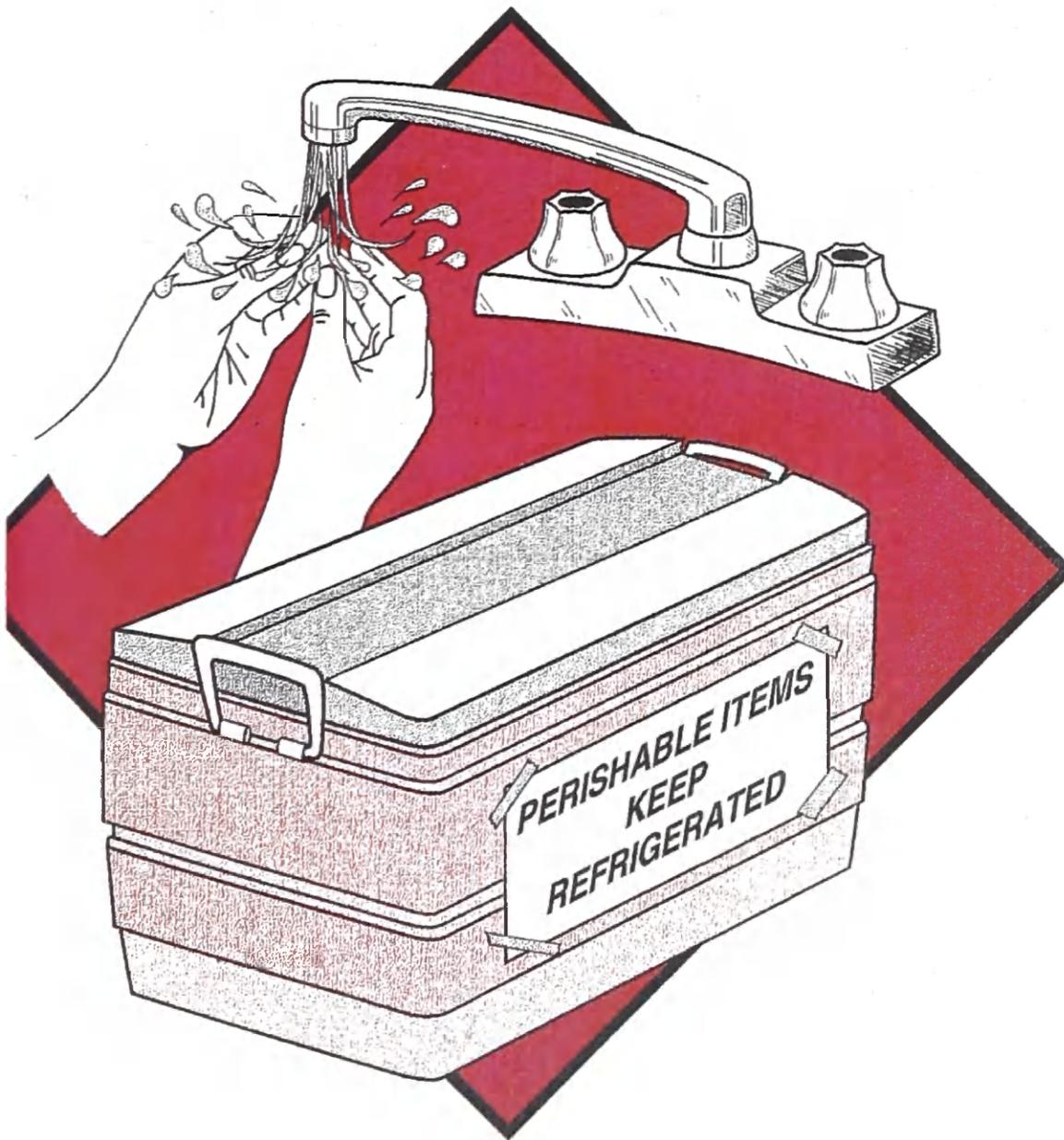
## **Section F**

### **Booklet 4: Safe Food Handling**

# SAFE AID

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## Food Safety Training Program for Food Banks



**Booklet 4**

**FOOD PROTECTION**

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# 1. What is Safe Food Handling?

Controlling the quality of donated food is a complex issue. There are at least four phases of control which may affect food quality:

A. **Original manufacturing.** This includes all processing and handling by the original and subsequent manufacturers:

-  handling of raw product,
-  processing,
-  cooking,
-  canning,
-  packaging,
-  refrigeration,
-  storage, and
-  transportation.

B. **Secondary preparation and storage of food.** This is handling of food by your donor and could include:

-  refrigeration,
-  storage (and package condition),
-  transportation,
-  preparation,
-  cooking, and
-  holding (ex. fried chicken or soup from restaurants).

**C. Preparation and handling of food at the food bank.** This includes:

-  refrigeration,
-  storage,
-  repackaging and
-  preparation (cutting fruits and vegetables or cooking any product).

**D. Handling of food by the recipients of food from your food bank,** including:

-  refrigeration,
-  storage,
-  handling, and
-  cooking.

While the first three of these phases are regulated and inspected to some degree, home use is obviously not controlled. Consumers may or may not know proper handling and storage procedures. They are unlikely to have critical information on the age and condition of the food they receive (since the food bank may not know this either).

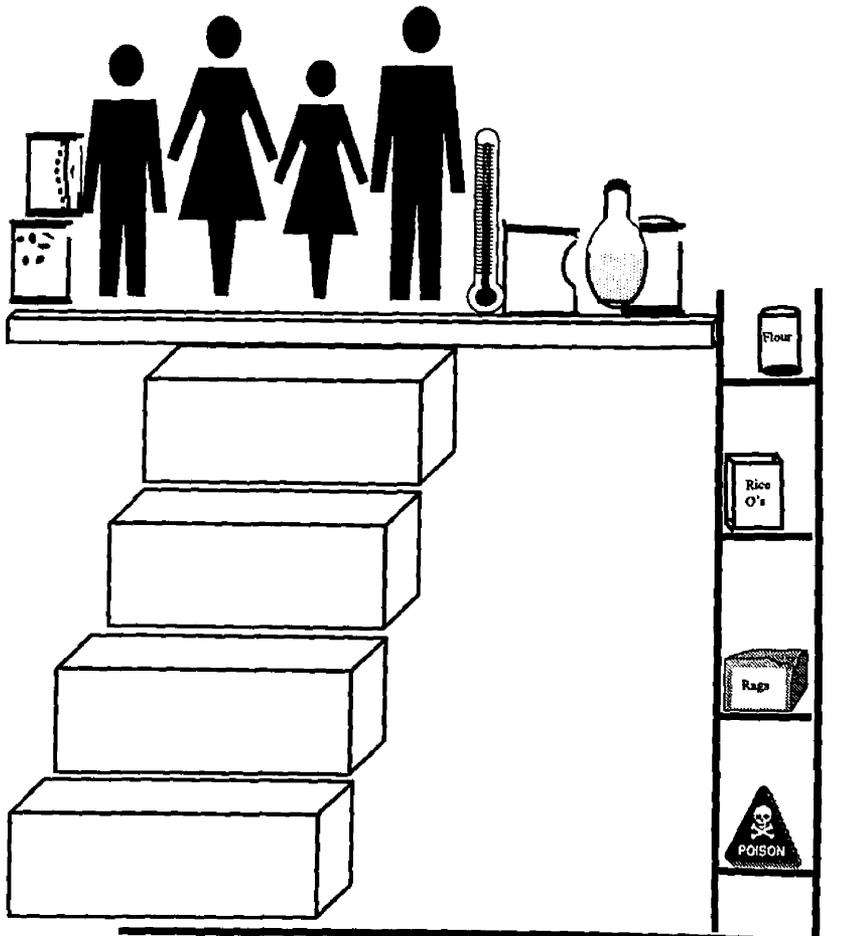
Because all of these stages provide opportunities for mishandling (and thereby for bacterial growth) food banks must be especially careful in how they handle food.

Insuring a safe food supply at food banks involves three steps.

**Step 1** is assessment of food age, packaging and general condition. Information on risk assessment can be found in booklet 3 of this series.

**Step 2** is proper handling procedures. Information about safe handling is provided in this booklet.

**Step 3** is safe storage. Facility specifications for food banks are covered in booklet 2. Storage temperatures are covered in both booklet 2 and booklet 4.



## 2. Personnel Practices

One of the most critical areas of control over food safety is personnel practices. Micro-organisms such as *Staphylococcus aureus* bacteria and the *Hepatitis* viruses are easily transferred from workers to food. Several points of control for personnel practices are listed below.

### A. Worker storage and break areas

The first step in creating a safe worker environment is to designate worker storage and break areas. A designated storage area should be big enough to provide room for all purses, backpacks, sunglasses, personal dishes, etc. The storage area should be separated from all food, dish and single-use products (ex. paper cups or napkins). A worker storage area might be a cabinet or row of coat hooks with shelves above or below. All personal effects should be stored in this area.

A break area should also be designated. This area should be away from all food preparation and storage. A break area might include a table and chairs in a remote corner of the kitchen or storage area. If your food bank is not entirely non-smoking, smoking should be confined to the break area. **In no case should eating, drinking, gum chewing, or smoking be allowed in food preparation areas.**

## B. Personal Hygiene

Since bacteria are naturally present on hands, mouths and bodies, worker hygiene is a critical step in food protection. Workers should be:



1. free of any symptoms of disease,
2. clean (hair and bodies) with nails clean, trimmed short and filed,
3. free of stray hairs (long hair should be pulled back or covered),
4. dressed in clean clothes (and aprons if provided) with pockets empty of items which could fall into food,
5. wearing minimal jewelry, and
6. wearing clean disposable gloves when they have cuts, scrapes or infections on their hands and whenever they are directly touching food which will not be washed or cooked before use.

Item one above is critical. **Never allow a sick volunteer or employee to work with food.**

Guidelines for restricting sick employees can be found in section 5 of the *Safe Aid Training Manual*.

## C. Handwashing

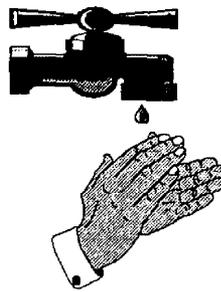
Hands should be washed (or gloves changed) between each task. Washing is especially important:



1. before handling food (after any other activity or when first entering the food bank),

2. after handling trash containers,
3. after using the bathroom or changing diapers,
4. after petting animals,
5. after coughing, sneezing or nose blowing,
6. after smoking,
7. after handling any toxics or poisons,
8. after handling contaminated food,
9. after handling raw meat, poultry or eggs,
10. after handling pencils, paper, money, etc.,
11. after touching the face or any part of the body, and
11. after touching the floor or a contaminated surface.

The best method for handwashing is to:



1. remove all rings.
2. use continuously running warm water.
3. moisten hands well and obtain soap from the dispenser.
4. lather every hand surface (including the area between fingers, backs of hands, wrists and under fingernails) and rub vigorously for at least 20 seconds. Clean fingernails with a sanitized nail brush. Also thoroughly wash rings.
5. holding hands downward, rinse well.
6. dry hands with a paper towel.
7. turn off the faucet using the paper towel instead of bare hands.

In order to facilitate effective hand washing, handwash sinks should be provided with:

- ◆ a nail brush which is frequently sanitized,
- ◆ antibacterial soap in a dispenser which sits on the side of the sink or is mounted on the wall (bar soaps are good media for bacterial growth), and
- ◆ a paper towel dispenser which is mounted near the handwash sink (a towel roll holder such as the one used in home kitchens is acceptable).

Some workers may find that wearing gloves or frequent handwashing worsens chapped or cracked skin. One remedy for this is a medicated anti-bacterial lotion.

#### **D. Worker Habits**

While engaged in food preparation, it is important that workers:



keep their hands away from face, hair or clothing. These surfaces naturally harbor bacteria that can rapidly multiply in food.



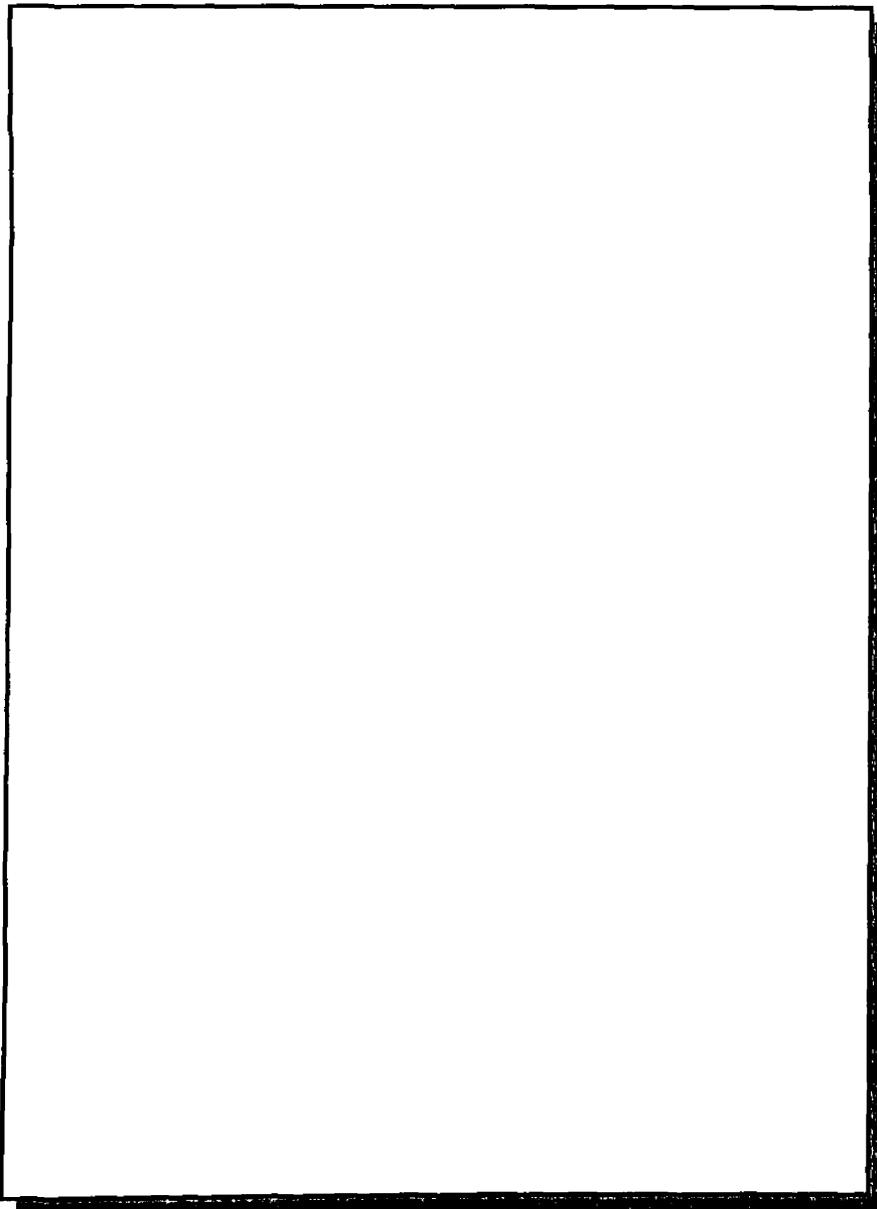
turn their face away from food and cover their mouth and nose with a tissue if they sneeze or cough. The tissue should be thrown away and gloves changed or hands washed immediately after sneezing or coughing.



maintain minimal hand-to-food contact. Especially when handling ready-to-eat food, clean (sterilized) utensils or clean gloves should be used instead of hands.

### 3. Exercise: Floor Plan

In the square provided below or on a blank piece of paper, diagram your food bank. If worker areas are not currently designated, locate a place for a break area and for an employee storage area. Also show where the handwashing sink is located and how it is reached from work areas. When you've drawn the floor plan, use arrows to show how the food flows from receiving to storage to re-packaging, etc.



## 4. Safe Food Handling

Safe food handling procedures fall into four categories: temperature control, storage, preventing cross-contamination, and preparation.

### A. Temperature control

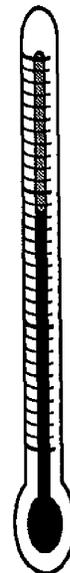
Potentially hazardous foods (such as meats, dairy-based products and cooked foods) should never be held between 40° F and 140° F; these temperatures are ideal for bacterial growth. Even foods which will be cooked before consumption may be dangerous when held for long periods of time at unsafe temperatures. Bacteria may produce toxins that are not destroyed by high temperatures.

Food banks seldom deal with hot foods. If your food bank conducts cooking demonstrations or analyzes restaurant food for recovery programs, however, remember that:

- Cooked food must be held at or above 140° F or quickly cooled to < 40° F.
- Food which is reheated must remain at or above 165° F.

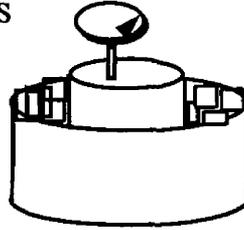
Warm food which is being stored should be rapidly cooled. For all food which requires refrigeration:

- Cooled foods must remain at or below 40° F. Refrigeration units should be set between 32° F and 40° F.
- Foods which are frozen should remain between 0° F and -10° F.



Foods may be cooled quickly in the following ways:

1. Place food in the refrigerator or freezer in shallow, partially covered pans.
2. Pack refrigerators and freezers so air can circulate.
3. Pre-cool foods using ice baths.
4. Agitate foods in an ice bath or in the refrigerator in order to release heat. This is especially effective when using an ice paddle.



If your food bank experiences a power outage, keep refrigerator and freezer doors closed. Refrigerated food will last for a few hours without power. A closed, well-packed freezer will last for at least 1 day. Adding dry or block ice to a refrigeration or freezer unit may extend this time; it is important, however, that water not be allowed to drip onto food packages or pool in the bottom of the unit.

Foods which are thawed before repackaging should be thawed in the refrigerator or under continuously running, potable cold water. Thawing foods should not raise the temperature above 40° F. Never refreeze thawed foods, since freezing and re-thawing may allow micro-organisms to reach a harmful level.

If frozen foods accidentally become thawed, distribute them immediately and inform recipients that they should not be re-frozen.

Freeze fresh meat, poultry or fish immediately if it will not be used within a few days.



Be discriminating. If you can't tell or remember when a food was refrigerated, or if the food shows any signs of spoilage, throw it out.

HACCP food procedures (booklet 5) recommend that food not remain out of temperature for more than four hours. Time out of temperature includes all time for transportation, preparation, cooking and cooling. Since you cannot account for all of the time on most food you receive, **never allow food to remain out of temperature for more than two hours.**

In order to protect perishable foods that are donated or purchased:

1. pick up perishable foods last.
2. always transport perishable foods in an ice chest. Check the temperature when the food is picked up and when it is dropped off at the food bank. Even short stops during warm weather or in a heated car can raise the temperature of foods enough to encourage bacterial growth.
3. upon arrival at the food bank, unload and store perishable foods first.

**NOTE:** There are important differences between handling raw and processed perishable foods. If your food bank distributes restaurant leftovers, contact the Montana Food & Consumer Safety Bureau about the "Second Hand Program" (phone numbers listed in the Safe Aid Training Manual).

## B. Calculating Time-out-of-temperature

The longer food remains out of temperature (temperatures between 40° F and 140° F), the more likely that bacteria will multiply to an effective dose. Because donations contain unknown variables, food at food banks should not remain out of temperature for longer than two hours. An example of calculating time-out-of-temperature is given below.

<i>A large grocery store calls Pantry X to offer them 6 packages of chicken legs which have not been purchased during this week's sale. A volunteer is dispatched to pick up the chicken. He arrives at the store at 10:00 am, then makes stops at two other businesses to pick up donations. He arrives at the food bank at 11:15 and places all of the donations on the loading dock.</i>	1 hr 15 min
<i>Another volunteer stocks the food, putting the chicken in the refrigerator at 11:40. At 1:00, a third volunteer opens the chicken and repackages it into smaller zip-lock bags. The small bags are placed in the refrigerator at 1:35. The small zip-lock bags are placed in baskets at 1:50 and given to clients from 2:00 to 2:30.</i>	25 mins 35 mins 40 mins
<b>TOTAL</b>	<b>2 hrs 55 mins</b>

(The two hour time limit could have been met if perishable foods were picked up last and stored first.)

## C. Dry Storage

Information about designing storage areas is contained in Booklet 2 of this series. All stored foods should be maintained at proper temperatures, covered, labelled, and rotated. Proper storage reduces the chance of rodent or insect infestation.

### ■ Temperatures

Optimally, **temperatures in dry storage rooms should be between 50° F and 70° F.**

Temperatures may be lower as long as the food doesn't freeze. Freezing temperatures and temperatures above 70° F degrade food quality.

### ■ Containers

**Food should be stored in containers which are easily cleanable, non-absorbent, durable and smooth.** Airtight containers are preferable. Bulk foods should be stored in food-grade plastic containers or in containers with food-grade liners. (Food grade liners are usually clear while trash can liners are dark colors.)

### ■ Labelling

**All food containers** (in freezers, refrigerators and dry storage) **should be labelled with the name of the item and the date it is placed in storage.** Foods can be labelled inexpensively with masking tape and a permanent marker. It is especially important that cleaning solutions be labelled and stored away from food, dishes or single use products. Labelling food products

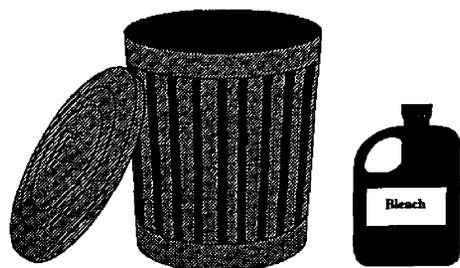
will help you decide which food is unsafe and should be discarded. It will also help you analyze how rapidly food turns over within your food bank.

## ■ FIFO (First In First Out) and Storage Times

**Stored foods should be rotated so that the oldest foods are used first.** Any foods that appear moldy or spoiled should be discarded immediately and disposed of in such a way that they cannot be re-used. Discarded food may be donated to pig farmers or local composting groups or may be denatured with bleach or ivory dish soap and thrown away.

Any salvaged, refrigerated food or food left over from a cooking demonstration should be discarded after 3 days.

For more information on assessing food safety, see booklet 3.



## **D. Preventing Cross-contamination**

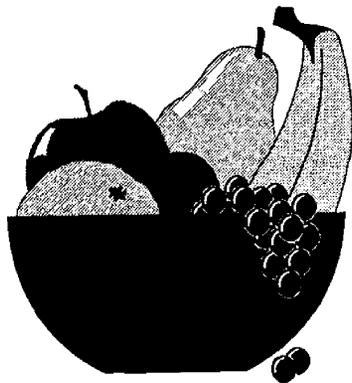
Cross-contamination occurs when clean fresh food, hands or utensils come into contact with bacteria from soiled hands, clothing, cleaning materials, food processing equipment, work surfaces, utensils or dishes, etc. It can also occur when juices from raw meat, poultry or fish are exposed to other raw or cooked foods. To prevent cross-contamination:

1. Wash hands frequently. Wear gloves when handling ready-to-eat food or when cuts, abrasions or sores are present.
2. Wash and sanitize kitchen towels and cloths frequently (dish cloths are preferable to sponges since they are easier to clean). Use separate cloths for cleaning dishes and work surfaces.
3. Keep raw meat, poultry and fish away from other foods (store meats on trays on the lowest shelf of the refrigerator).
4. Wash and sanitize cutting boards, knives and utensils between uses, especially after processing meat products. Never use the same utensil on different foods.
5. If possible, use separate cutting boards for meats, other raw foods and cooked foods. Color coding the boards is a good way to keep uses separate.
6. Keep food preparation areas and surfaces clean and sanitized. See booklet 2 for information on cleaning and sanitizing work areas.

## **E. Food Preparation**

Vegetables which may not be washed before consumption should be washed and agitated under cold water before distribution. If necessary, a brush may be used to dislodge dirt. In addition, whole melons may be dipped in a solution of 100 ppm Chlorine to eliminate harmful organisms on the outer surface. Sinks should be cleaned and disinfected before being used to prepare any food items.

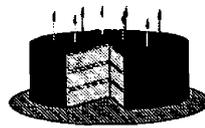
Bulk bread items, such as bagels, which are not individually wrapped should be protected from contamination by having a food bank worker dispense them or by providing utensils or waxed paper squares to food recipients. A person reaching into a large bin to grab a piece of bread will invariably touch other pieces of bread as well. Since you are unable to determine whether a client's hands are clean and free of disease, allowing them to touch food which you will distribute to other persons leaves you liable.



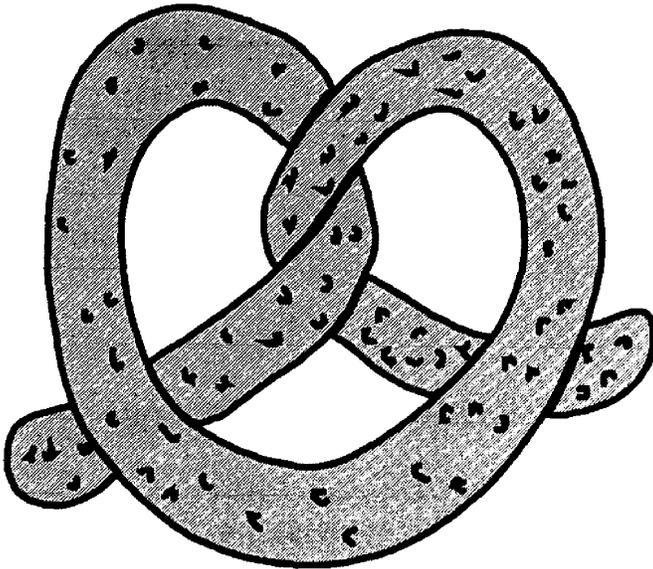
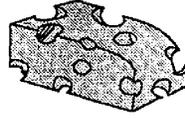
## 5. Planning Safe Food

Clients without adequate refrigeration and cooking facilities should be provided with food which can be safely left out at room temperature for several hours. In deciding which foods to include, remember that bacteria do not grow well in foods that are high in acid or low in moisture. The following items are examples of good foods to include in a transient package.

1. nuts, peanut butter
2. crackers
3. bread, cookies, cakes, and fruit pies (excluding custard-type items or cheesecakes)
4. tortillas
5. jam, honey, syrup, candy
6. butter, margarine and cooking oil
7. dry cereals
8. dry powdered milk
9. bottled or canned fruit juices
10. raw, canned or dry fruit
11. raw vegetables
12. canned meats or other canned goods which do not require preparation
13. dried, processed meats (salami, pepperoni, jerky, etc.)



14. pickles, relishes,  
mustard, ketchup
15. dry or hard cheeses  
(cheddar,  
Parmesan, etc.)
16. potato chips and other  
packaged snack foods
17. sealed pudding packs



# *Safe Aid*

## **Section G**

### **Booklet 5: Repackaging Bulk Foods**

# SAFE AID

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## A Food Safety Training Program for Food Banks



**Booklet 5**

**SAFE FOOD HANDLING: RE-PACKAGING BULK FOOD**

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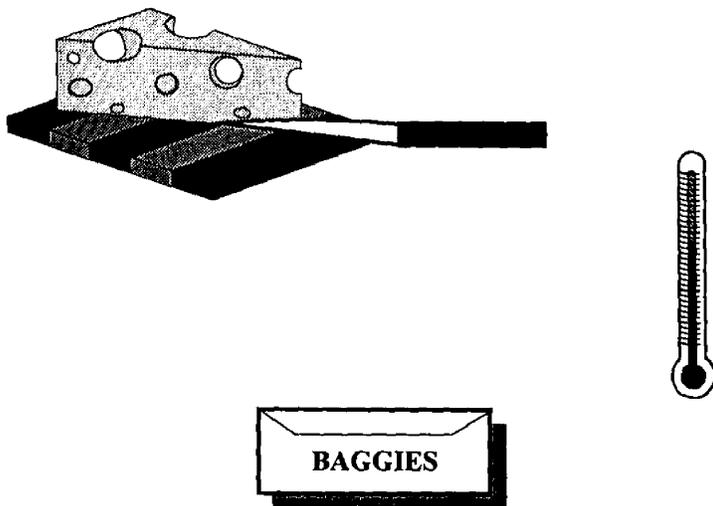
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# 1. Is Re-packaging a Significant Risk?

Re-packaging is the most complex food preparation operation at most Montana food banks. Re-packaging consists of dividing large or bulk packages of food into smaller units. These units are typically sized to meet the needs of a family for one to two days.

Re-packaging is considered a complex food preparation operation because it involves breaking quality control seals, physically handling the product (as opposed to just handling the package) and labelling information for product safety.

Beginning on page 10, this booklet will introduce HACCP (Hazard Analysis and Critical Control Point) as a prevention-based system for managing food safety in food banks. Before we look at HACCP, however, a few points on preparing for re-packaging are worth exploring.



## **2. Re-packaging Environment & Equipment**

As explained in booklet 2, the facilities for any food preparation operation should be separate from other food bank activities. If physical separation (a separate room) is not possible, the activities should be separated by time. You should not, for example, re-package food in the same place and time as you are distributing to clients.

It is important that the re-packaging area be close to a source of hot water. Hot water is necessary for hand washing and general cleaning/sanitizing purposes.

The facilities must also be easily cleanable, non-absorbent, durable and smooth (ENDS). This includes floors, walls, ceilings, counter tops, equipment and storage containers.

Before beginning a re-packaging operation, the facility should be clean. All counter tops should be sanitized with 100 ppm chlorine (as explained in booklet 2). Equipment, utensils and containers should be washed, rinsed, sanitized with 50 ppm chlorine (booklet 2) and air dried. These areas should be cleaned again immediately after use.

It is important to note that shallow containers cool more quickly than deep containers. Metal containers also speed the cooling process since metal conducts heat more rapidly than plastic. Metal containers may be used, for example, to stack filled baggies.

### 3. Containers

Containers for re-packaged foods should either be new or sanitized. All packaging should be easily cleanable, non-absorbent, durable and smooth and should seal in order to protect the product. (NOTE: "Vacuum packaging" is not recommended for food bank re-packaging efforts. )

#### A. New Containers



The easiest solution for re-packaging is to use zip lock baggies. Paper bags offer minimal protection and are not recommended.



Never re-use baggies, aluminum foil, plastic wrap or freezer wrap since they cannot be easily cleaned, are not durable, and are often not non-absorbent. (All of these qualities make it easy for the materials to collect bacteria.)

#### B. Sanitized, re-used containers



Examples of containers which may be re-used are glass jars and heavy plastic tubs (butter containers or restaurant grade containers such as those used for sour cream in restaurants). Containers may be donated by individuals or restaurants.

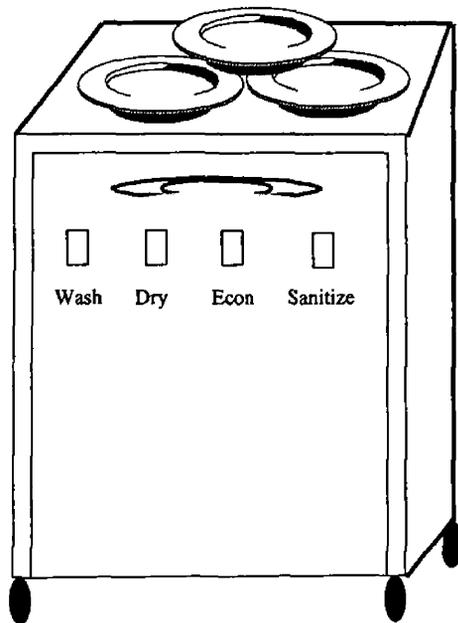


Containers should be carefully examined for chips or cracks. Jar lids should be clean and free of rust. All defective containers should be discarded.



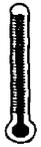
Containers may be cleaned either by washing, rinsing, sanitizing with 50 ppm chlorine and air drying or by washing in a dishwasher where the final rinse reaches 180° F. **Most residential dishwashers do not reach 180° F.** Containers washed in residential dishwashers must still be sanitized and air dried.

For more information on manual dishwashing, see page 21 in Booklet 2. of the Safe Aid series.



## 4. Handling

Booklet 3 explains the general principles for handling food. It is especially important that these principles be observed during re-packaging operations. For example:



Food should never be re-frozen once thawed or kept out of temperature for more than 2 hours. This includes time spent in transportation, thawing, preparation and distribution.



Gloves should be used whenever a worker is touching a food that will not be washed or cooked again before consumption. Utensils may also be used to avoid direct hand-to-food contact.



Dispose of unsafe food appropriately and quickly. Surplus food may be given to pig farmers or local composting groups. Bleach or ivory soap should be used to denature food in dumpsters so that it is not re-used.

It is also important to:



Use caution in re-packaging any food that will be served to an “at-risk” population. Examples include powdered milk or formula used to serve infants or the elderly.

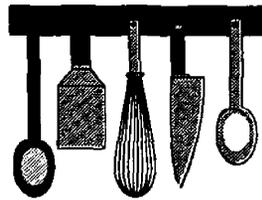


Use care in re-packaging any food that was packaged under pressure, heat or vacuum sealed. Violation of this type of

package decreases the shelf life and may require special measures such as refrigeration. (Note: most canned and bottle goods fall under this category.)



Use packaging which is appropriate for the food you are working with. Never pour hot liquids into ordinary glass jars since they are not tempered to withstand sudden heat changes and may break.

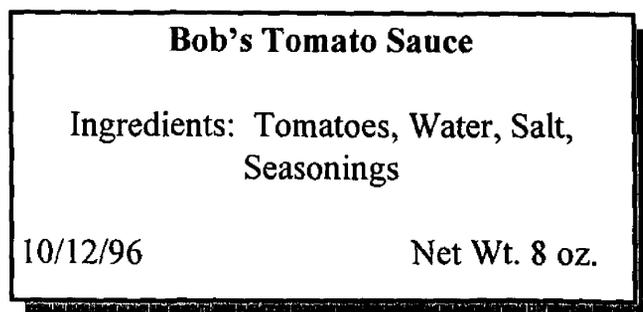


## 5. Labelling

Labelling is required by law on all food produced by manufacturers. In re-packaging operations, food banks separate the label information from the food. Minimally, you should supply a replacement label with the product name, ingredients and net weight. A more complete label, however, would include:

1. the common or usual name of the product,
2. the net weight,
3. a list of ingredients,
4. applicable dates (such as the original "sell by" date, the date the food was re-packaged or the expiration date), and
5. the name of the distributing agency. (Note: this is optional and should be carefully considered. Some food banks in Montana have noted a connection between domestic abuse and use of food from the food bank.)

You could also include serving instructions on the label. For some foods, a recipe or serving instructions has been shown to dramatically increase the rate of use.



## 6. Self Test

A. Which information is not required on a label?

1. Product name
2. Picture of product
3. Net weight
4. Ingredients

B. Which method below is an acceptable way to dispose of unusable food?

1. Throw it in the garbage
2. Flush it down the toilet
3. Feed it to the neighborhood dogs
4. Denature it with bleach or ivory soap and discard

C. Which container would cool food the quickest?

1. A 5-gallon plastic tub
2. A 6-inch tall metal pan
3. A 2-inch tall metal pan

### True or False

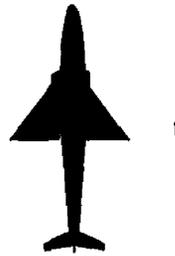
- T F Paper bags are good re-packaging containers.
- T F Baggies may be re-used if they are washed and sanitized.
- T F Jars or tubs which are re-used should be washed, rinsed, sanitized with 50 ppm chlorine and air dried.
- T F Jars with only small chips may be used as long as they don't leak.
- T F Gloves or utensils should be used to avoid hand-to-food contact when re-packaging.

## 7. Using HACCP to Ensure Food Safety

HACCP (Hazard Analysis and Critical Control Point) is a preventative food safety system designed by NASA. HACCP ensures food quality by considering food handling as one continuous system: from receiving to storage and preparation. Many types of food service now use HACCP to manage food quality.

HACCP recognizes five Critical Control Points (CCP's):

1. cooking,
2. cooling,
3. cross contamination,
4. re-heating,
5. holding.



Most Montana food bank operations do not include cooking as a part of normal operations; some food banks do prepare sample meals to show what can be done with the food they provide. Montana food banks do routinely deal with the remaining four CCP's during re-packaging operations: products are thawed, re-packaged, cooled and held. We will consider all of these steps in developing a HACCP approach to safe handling of re-packaged food.

The following steps make using HACCP easy.

1. **Chart the food flow** for any potentially hazardous food that you provide. Do this by observing actual procedures and including all steps from receiving to delivery. Page 12 of this booklet shows how to set up a flow chart.

2. **Identify the Critical Control Points** in the process. A CCP is any point where control can be applied to eliminate or reduce a food safety hazard.

3. **Establish Critical Limits** for temperature, time or any other factor that can serve as a “boundary” for safe food. (Hint: these limits can be based on information from the other booklets in this series. For example, the limits on time for thawing and preparation would correspond to section 4 in booklet 4 which says that food must not remain out of temperature for more than two hours and that thawing should occur in the refrigerator or under running water.)

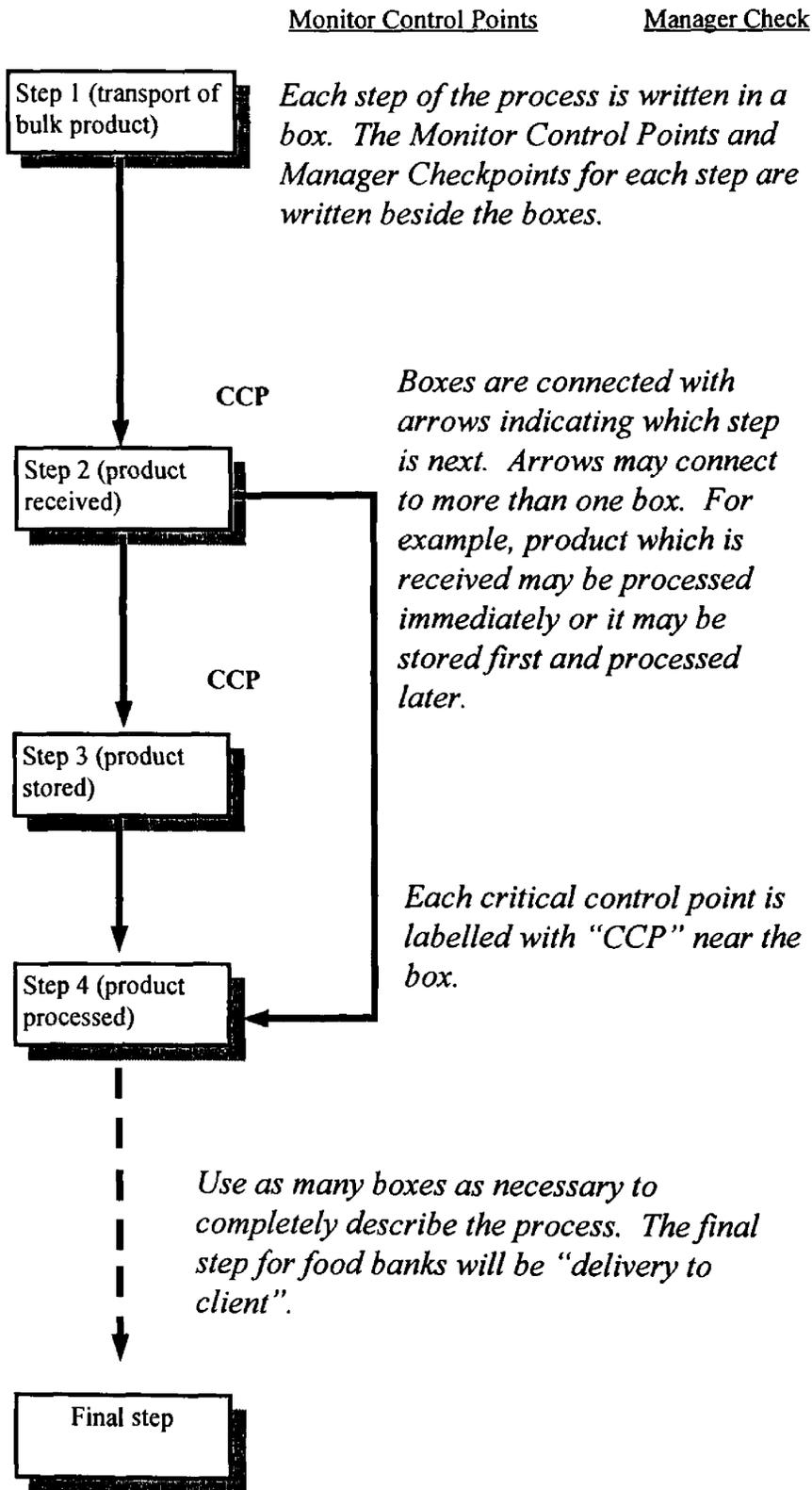
4. **Determine** what types of **monitoring** will insure that Critical Limits are observed.

5. **Document monitoring and corrections.** In order to verify the process, it is necessary to keep records of how you meet the critical limit and any corrective actions. Corrections are necessary whenever monitoring shows a problem.

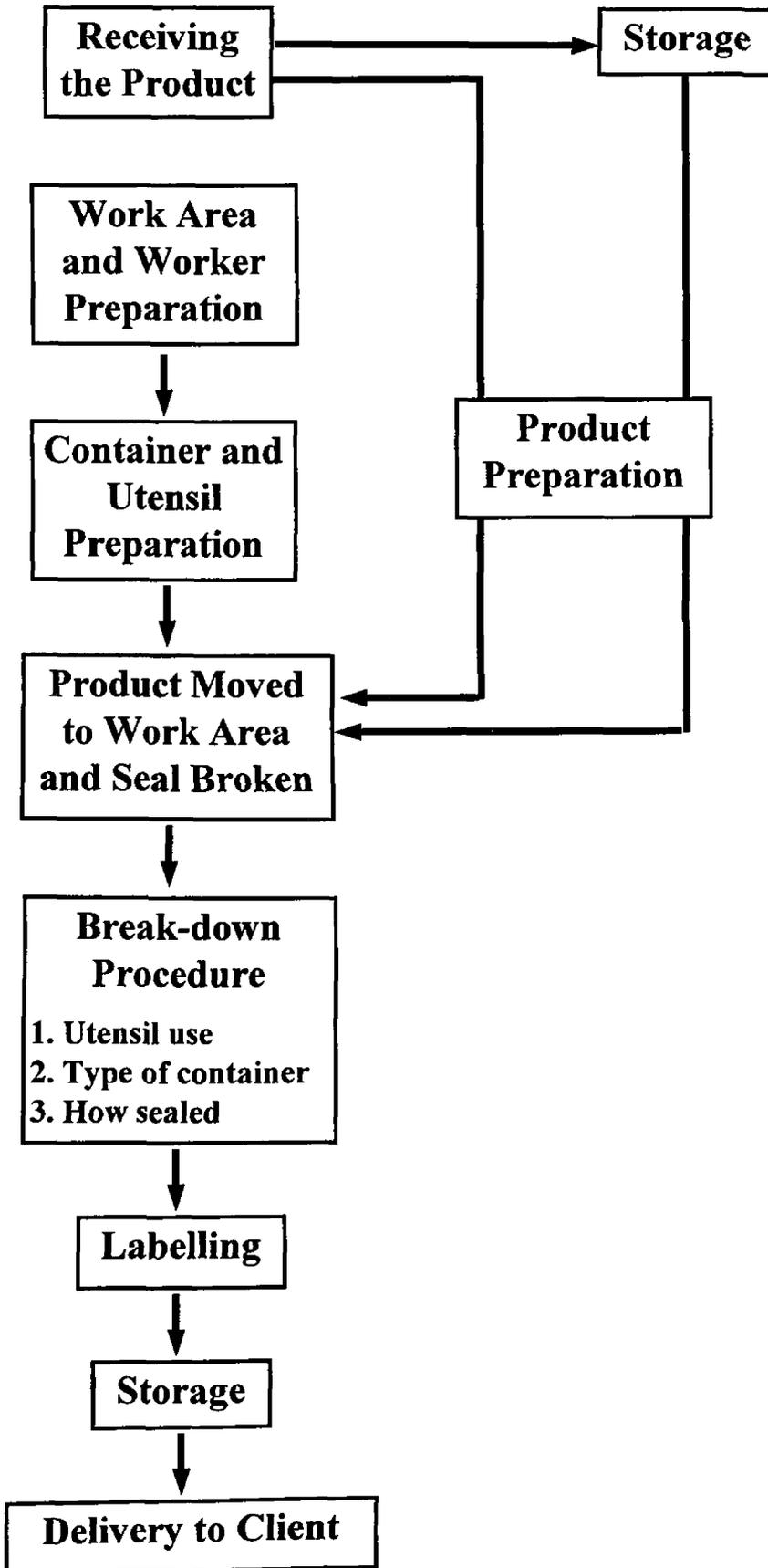
6. **Verify that the HACCP process works.** Verification uses the documentation records from step 5. For example, when re-packaging chicken legs, how often was the temperature taken? Were the temperatures always less than 40° F or greater than 140° F? If the product was out of temperature, could it be brought back to temperature in time or was it discarded?

The next three pages show a blank HACCP chart, an example of a general chart for a food bank re-processing operation, and chart designed specifically for re-packaging cheese.

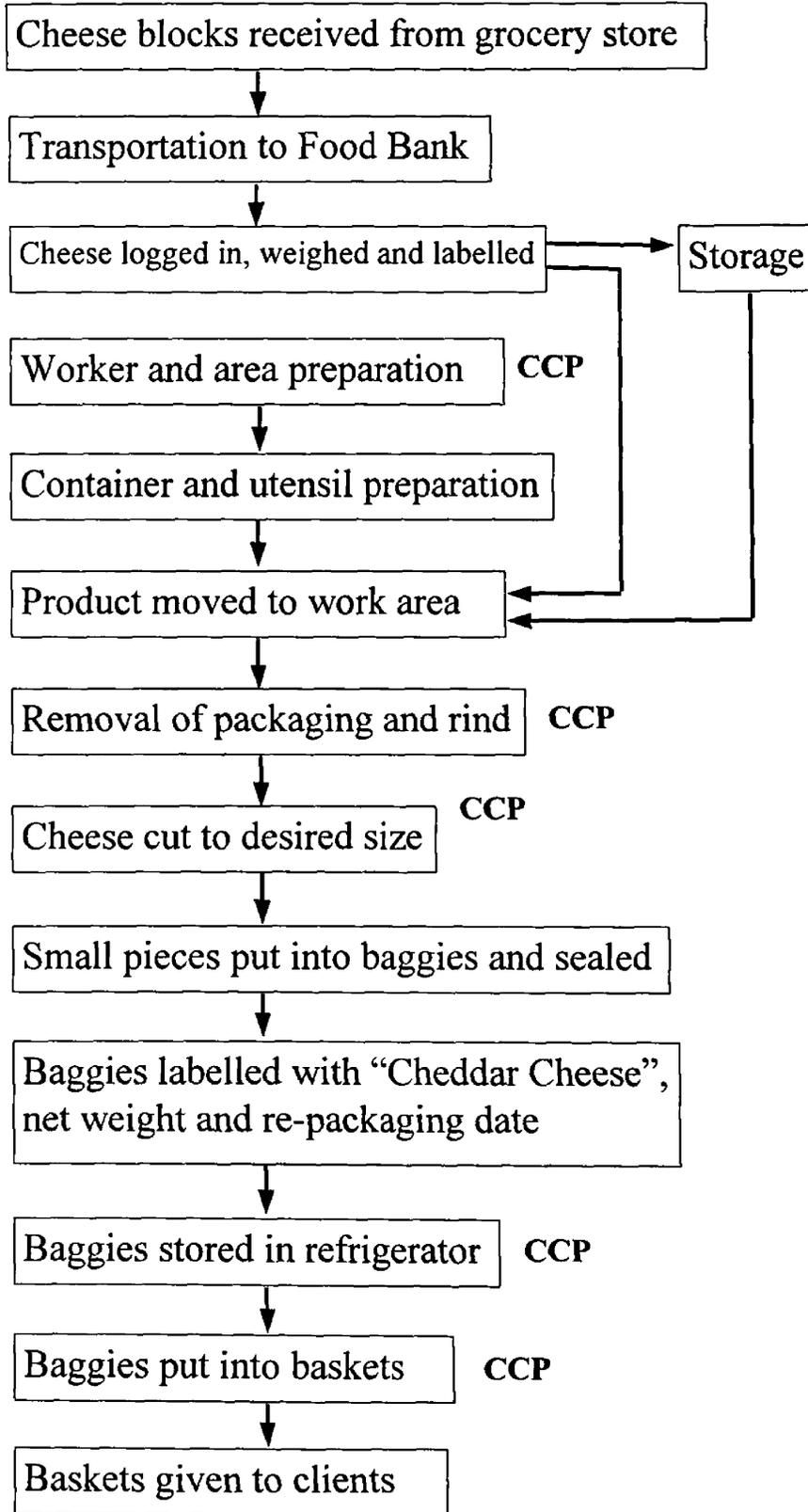
# Figure 1: A Blank HACCP Flow Chart



**Figure 1: Re-packaging Flow Chart**



**Figure 3: Detailed HACCP Chart for** ..





## 8. HACCP Practice Exercise

A blank HACCP flow diagram is provided in the *Safe Aid Training Manual*. Make a copy of the diagram to use in designing a HACCP plan for a food that your food bank re-packages. After you have diagrammed the operation flow, decide which steps are critical control points and how they can be monitored.

# *Safe Aid*

## **Section H: Summary Sheets**

**(1- to 2-page summaries of each booklet)**

# Safe Aid Summary

## Booklet 1: Food Banks and Food-borne Illness

**Providing safe food is as important as providing food itself.** A hungry person is more likely to consume food they wouldn't normally choose. If this food is unsafe, it can cause food-borne illness. Food-borne illness, which affects between 24 and 81 million people per year, can lead to serious discomfort, life-threatening complications, and even death.

### Increased Risk

Food-borne illnesses can be deadly for people whose health is already at risk:

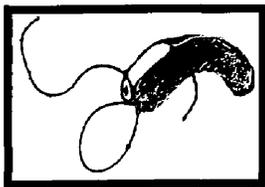
- ❖ People with long-term poor nutrition
- ❖ Pregnant women
- ❖ Chronically ill people
- ❖ Young children
- ❖ Senior Adults



### Controlling Bacterial Growth

The easiest way to prevent food-borne illness is to control bacterial growth by:

- ☞ providing a clean and sanitary environment for storing and processing food,
- ☞ inspecting donations for contamination and determining how long food may be stored,
- ☞ proper food handling and storage,
- ☞ good worker hygiene, and
- ☞ proper food preparation (specifically in re-packaging food).



Bacteria, the most common cause of food-borne illness are everywhere. They grow and reproduce best in the following conditions:



**Temperature.** Ideally between 40°F and 140°F.



**Water** (moisture).



**Food.** Although bacteria can grow on any food, they especially like high protein foods such as milk, meat, and eggs.



**Time.** Given the right conditions, just 1 bacteria can produce 33 million bacterial cells in 12 hours.



**Other conditions,** such as oxygen and the right chemistry (ex. acidity or salt).

### Causes of Food Contamination

There are three ways that food may become contaminated in food banks.

1. **Contaminated Products.** Some bacteria are already present in the food that is taken into the food bank. Contamination may originate naturally in the raw materials or it may be introduced during processing.

2. **Cross-contamination** is the transfer of harmful organisms to food by other food, utensils, dishes, equipment, work surfaces, etc. One of the most common sources of bacterial contamination in any food establishment is poor worker hygiene.

3. **Other Transport Mechanisms.** Bacteria can also be transmitted to food by insects, rodents, airborne dust and water.

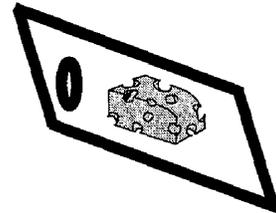
How you set up and maintain your food bank determines how many routes bacteria have to invade and thrive. Information on how to safely maintain a food bank is given in Booklet 2 of the *Safe Aid* series.

#### Work Space Organization

- Visitors to the kitchen area should be discouraged (clients, kids, dogs, and other beings not essential to your food operation). 
- Smoking should only be allowed in a clearly marked smoking area that is away from all food or dish handling areas. 
- A separate area should also be designated for worker breaks and for storing personal items (coats, purses, employee food, etc.). 
- Garbage cans should be stored tightly covered and away from food handling and storage areas. (Empty cans often to minimize insects and rodents.) 

#### Cutting Boards

Cutting boards are an especially dangerous source of bacterial contamination. The tiny grooves made by knives hide food and water sources which are perfect for bacterial growth. To make cutting board use safe:



-  Use separate cutting boards for different types of food (ex. 1 for beef, 1 for poultry, 1 for fresh vegetables, etc.).
-  Clean cutting boards after each use by:
  - ◆ scrubbing in hot, soapy water,
  - ◆ rinsing,
  - ◆ dipping in a sanitizer solution of 1 or 2 tsp. of bleach per gallon of water (100 ppm chlorine), and
  - ◆ allowing the board to air dry.

## Dishwashing Process

1. **Scrape and pre-rinse** dishes. Soak only if absolutely necessary.
2. **Prepare** all dishwashing sinks by washing, rinsing, and disinfecting them.
3. **Wash** dishes in hot, soapy water (120° F.). Change the wash water when cold or dirty.
4. **Rinse** in clean hot water (120° F.). Change rinse water when cold, soapy or cloudy.
5. **Sanitize** dishes by immersion for at least 30 seconds in very hot water (170°F) or for 1 minute in lukewarm water (75° F) with 1 tsp. new bleach per gallon of water.
6. **Air Dry** dishes, then store them in a clean area.

**Note:** Dishwashers may be used in place of steps 2 through 6 above. Dishwashers must reach 180° F in the final rinse or must leave a residual of 50 ppm chlorine on the dishes.

## Cleaning Methods

- Wash, rinse and sanitize counters often.
- Sanitize sinks used for washing food or dishes between each use.
- Store in-use cleaning rags in a bucket of sanitizer (1 Tbs of bleach per gallon of water). Never add soap to sanitizer since it forms a film and blocks the disinfecting action of chlorine.
- Disinfect floors with 3/4 cup of bleach per gallon of warm water. Empty water between each use and hang mop to dry.
- Machine wash linens in hot water and disinfect with bleach. Change dishcloths whenever dirty (at least once each day).

(Cleaning frequencies are recommended on page 26 of Safe Aid Booklet 2: Sanitary Surroundings.)



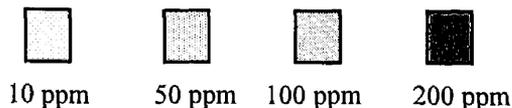
## Sanitizers

“Sanitizing” means reducing the number of bacteria on a surface by cleaning with a disinfectant such as bleach. In correct concentrations, bleach evaporates leaving little residue. Too much chlorine residue on a dish or utensil can cause chemical poisoning. In general:



- ◆ to sanitize counters and appliances, use: 100 ppm chlorine (1 Tbs bleach per gallon of water)
- ◆ to sanitize dishes, use: 50 ppm (1 tsp bleach per gallon of water)

Bleach in a bottle gradually loses strength as it ages. To correctly determine sanitizer concentration, use chlorine test strips. The strips turn different shades of gray at different concentrations:

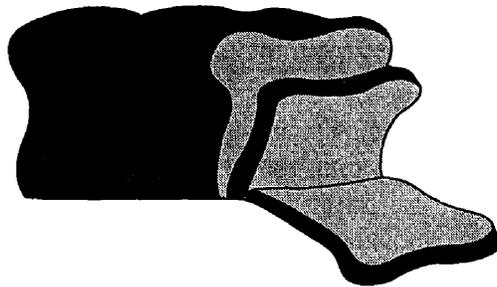


**Note:** Surfaces cleaned with bleach must be air dried to give the chlorine time to work and to prevent re-contamination.

Food packaging is designed to protect food. Contamination occurs when damaged or opened packages expose food to bacteria, viruses, molds, insects, rodent droppings and urine, cleaning products and other toxics, broken glass, contaminated water or sewage, etc.

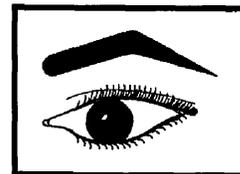
**Definition: Risk Management** is the evaluation of food safety.

Risk management deals with food safety, not food quality. Quality standards should be set up in addition to safety standards. For example, moldy bread is not safe and should be discarded. Stale bread, however, is safe but may not taste good. Whether or not you keep stale bread will depend on the size of your bread supply and your clients' demand for bread.



### General Risk Assessment Principles

- Use your eyes and nose as first-round guides. If food looks or smells suspicious (if you have any doubts at all), throw it out.
- Contaminated food may be slimy, off-color or moldy. Remember, however, that not all foods that cause food-borne illness will smell or look bad.
- Never taste a donated product to determine food safety! You can't see the microorganisms that cause food-borne illness. The amount of *Clostridium botulinum* that would fit on the head of a pin can kill you.



## Assessment Process

A. First, discard the food in any obviously damaged packages in a safe manner (donate it to local pig farmers or composting groups or denature it with ivory soap or bleach and discard it in the trash or sewage). “Damaged packages” includes:

- packages with tears
- bottles with popped safety seals,
- jars that have been opened,
- medicine containers without safety strips,
- leaking containers,
- packages with insect or rodent holes,
- stained paper and cardboard packages or packages that smell of a foreign material,
- products with missing or opened seals,
- any item which has been opened before it arrived at the food bank, and
- unlabelled or illegally labelled products.

**(More specific information on assessing damaged containers can be found on page 10 of Safe Aid Booklet 3: Risk Assessment.)**

B. Mark the date received on all cases of product and on all undated individual items so that you can maintain product rotation and keep food only for a safe period of time.

C. If labels are damaged or dirty, re-label the product with the following information (using masking tape or self-adhesive labels and a permanent marker):

1. manufacturer,
2. product,
3. ingredients,
4. weight, and
5. expiration date. (If the product doesn't have one, assign one of your own using the keep date guidelines on pages 23-31 of Booklet 3.)



## Storage Times, General Information

Sections 12 and 13 of Safe Aid Booklet 3 give general recommendations on how long food can safely be stored at your food bank. If foods have been consistently stored at correct temperatures, they may be safe well after the “use by” date printed on the product.

When determining how long to keep food, always be alert for mold, discoloration, slime and damaged packaging. These are sure signs that the food should be discarded. Also be aware that the nutrient content of fresh or packaged food decreases over time.

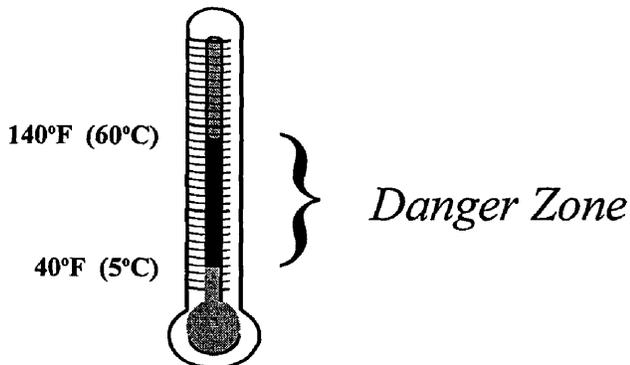
(Adapted from the Safe Aid Series, Montana State University Extension Service, 1996)

# Safe Aid Summary

## Booklet 4: Safe Food Handling

Careful food handling limits the ability of bacteria to grow and reproduce in food (and therefore to cause food-borne illness)

### Temperature Control



- No food in this range for >2 hours.
- No food thawed in this range.
- No food accepted from delivery in this range without a temperature history.

#### Cooling

Cool foods quickly by:

1. Placing food in shallow, partially covered pans.
2. Packing refrigerators and freezers so air can circulate.
3. Pre-cooling with ice baths.
4. Using an ice paddle to agitate foods in ice bath or refrigerator (in order to release heat).

#### Maintaining

Protect perishable food by:

1. Picking up perishable donations last.
2. Transporting perishable foods in an ice chest.
3. Unloading and storing perishable foods first.

#### Thawing

Thaw frozen foods by:

1. Storing in the refrigerator.
2. Thawing under running, potable cold water.

Never refreeze thawed foods; if frozen foods accidentally become thawed, distribute them immediately and inform recipients that they should not be re-frozen.

### Food Preparation



Vegetables which may not be washed before consumption should be washed and agitated under cold water before distribution. If necessary, a brush may be used to dislodge dirt. In addition, whole melons may be dipped in a solution of 100 ppm chlorine to eliminate harmful organisms on the outer surface. Sinks should be cleaned and disinfected before being used to prepare any food items.

Bulk bread items, such as bagels, which are not individually wrapped should be protected from contamination by having a food bank worker dispense them or by providing utensils or waxed paper squares to food recipients.

## **Personnel Practices**

Since bacteria are easily transferred from workers to food, good worker hygiene is critical.

### **A. Storage and Break Areas**

- ❖ All personal effects (such as purses, sunglasses, food, etc.) should be stored separately from food bank food and dishes
- ❖ **Never eat, drink, chew gum, or smoke in food preparation areas.**

### **B. Personal Hygiene**

Workers should have:

1. no signs of disease,
2. clean hair and bodies with nails clean and short,
3. long hair pulled back or covered,
4. clean clothes and aprons with pockets empty of items which could fall into food,
5. minimal jewelry,
6. clean, disposable gloves over cuts, scrapes or infections on hands and whenever touching food which will not be washed or cooked before use.



### **C. Worker Habits**

- ❖ Keep hands away from face, hair or clothing.
- ❖ Turn face away from food and cover mouth with a tissue if you must sneeze or cough. Throw the tissue away and wash hands/change gloves.

### **C. Handwashing**

Hands should be washed (or gloves changed) between each task. Washing is important:



1. before handling food (after any other task or when first entering the food bank),
2. after handling trash containers,
3. after using the toilet or changing diapers,
4. after petting animals,
5. after coughing, sneezing or nose blowing,
6. after smoking,
7. after handling any toxics or poisons,
8. after handling contaminated food,
9. after handling raw meat, poultry or eggs,
10. after handling pencils, paper, money, etc.,
11. after touching the face or body, and
11. after touching the floor or a contaminated surface.

The best method for handwashing is to:

1. remove all rings.
2. moisten hands in running warm water.
3. obtain anti-bacterial soap.
4. lather every hand surface (including the area between fingers, backs of hands, wrists and under fingernails) and rub vigorously for at least 20 seconds. Clean fingernails with a sanitized nail brush.
5. holding hands downward, rinse well.
6. dry hands with a paper towel.
7. turn off the faucet using the paper towel instead of bare hands.

# Safe Aid Summary

## Booklet 5: Re-packaging Bulk Foods

Re-packaging is considered a complex food preparation operation because it involves breaking quality control seals, physically handling the product (instead of just handling the package) and labelling information for product safety.

### Containers

Containers should seal in order to protect the product. (NOTE: "Vacuum packaging" is not recommended for food bank re-packaging efforts. )

#### Re-packaging Environment

**Location:** The facilities for any food preparation operation should be near a source of hot water (for hand washing and cleaning/sanitizing) and should be separate from other food bank activities. If physical separation (a separate room) is not possible, the activities should be separated by time.

**Cleaning:** Before beginning a re-packaging operation, all counter tops should be sanitized with 100 ppm chlorine (approximately 1 Tbs of bleach per gallon of water). Equipment, utensils and containers should be washed, rinsed, sanitized with 50 ppm chlorine (1 tsp of bleach per gallon of water) and air dried. These areas should be cleaned again immediately after use.

#### A. New Containers



The easiest solution for re-packaging is to use zip lock baggies. Paper bags offer minimal protection and are not recommended.



Never re-use baggies, aluminum foil, plastic wrap or freezer wrap since they cannot be easily cleaned, are not durable, and are often absorbent. (All of these qualities make it easy for the materials to collect bacteria.)

#### B. Sanitized, re-used containers

Containers for re-packaged foods should be easily cleanable, non-absorbent, durable and smooth.



Examples of containers which may be re-used are glass jars and heavy plastic tubs (butter containers or restaurant grade containers such as those used for sour cream).



Containers should be carefully examined for chips or cracks. Jar lids should be clean and free of rust. All defective containers should be discarded.



Containers which have been used to store chemicals should not be used to store food. All Containers must be washed and sanitized as explained in booklet 2 of *Safe Aid*.

## **Handling**



Gloves should be used whenever a worker is touching a food that will not be washed or cooked again before consumption. Utensils may also be used to avoid direct hand-to-food contact.



Use caution in re-packaging any food that will be served to an “at-risk” population. Examples include powdered milk or formula used to serve infants or the elderly.



Use care in re-packaging any food that was packaged under pressure, heat or vacuum sealed. Violation of this type of package decreases the shelf life and may require special measures such as refrigeration. (Note: most canned and bottled goods fall under this category.)



Use packaging which is appropriate for the food you are working with. Never pour hot liquids into ordinary glass jars since they are not tempered to withstand sudden heat changes and may break.



Food should never be re-frozen once thawed or kept out of temperature for more than 2 hours. This includes time spent in transportation, thawing, preparation and distribution.



Dispose of unsafe food appropriately and quickly. Surplus food may be given to pig farmers or local composting groups. Bleach or ivory soap should be used to denature food in dumpsters so that it is not re-used.

## **Labelling**

Labelling is required by law on all food produced by manufacturers. In re-packaging operations, food banks separate the label information from the food. Minimally, you should supply a replacement label with the product name and a list of ingredients. A more complete label, however, would include:

1. the common or usual name of the product,
2. the net weight,
3. a list of ingredients, and
4. applicable dates (such as the original “sell by” date, the date the food was re-packaged or the expiration date).

You could also include serving instructions on the label. For some foods, a recipe or serving instructions has been shown to dramatically increase the rate of use.

### **Bob's Tomato Sauce**

Ingredients: Tomatoes, Water, Salt, Seasonings

10/12/96

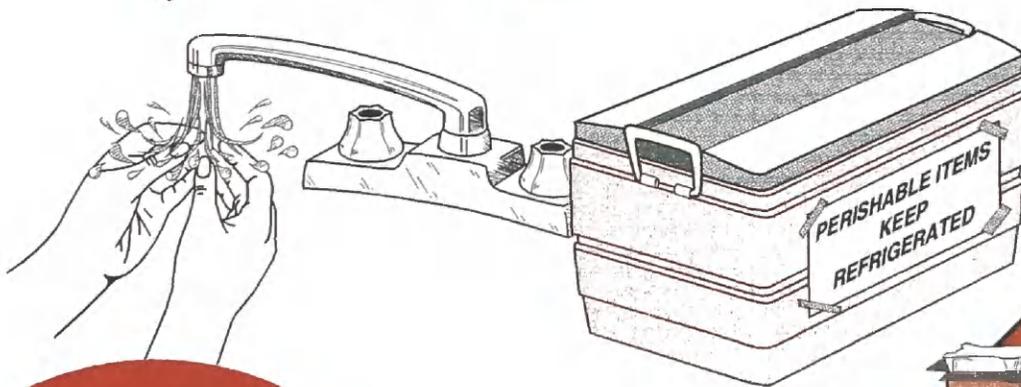
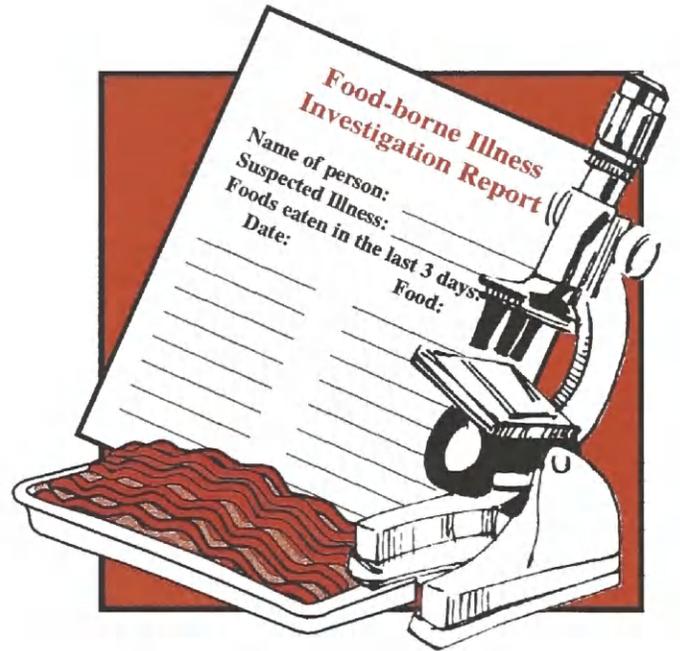
Net Wt. 8 oz.

# *Safe Aid*

## **Section I: Training Manual**

# SAFE AID

## A Food Safety Training Program for Food Banks



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# 1. Using the *Safe Aid* Training Manual

Food bank staff and volunteers come from a wide range of ages, educational backgrounds and lifestyles. The amount of time workers can devote to learning about safe food practices is often limited by the overwhelming amount of work required to keep a food bank running. Yet safe food is of critical importance in food banks.

Food banks feed a group of people who are at higher risk for food-borne illness because they fall into one or more of the following groups: undernourished, very young, very old, pregnant, or chronically ill. Contaminated food puts a food bank's reputation and the lives of its clients on the line.

*Safe Aid* has been designed to explain the critical issues of food protection in a series of discrete units that can be completed as time permits. The booklets explain the dangers associated with food-borne illness and show how to design a safe facility, a good risk management plan, and safe food handling protocol. The *Safe Aid* series may be used by individuals or groups within the food bank.

The *Safe Aid* Training Manual gives group leaders additional tools to use in preparing for group discussion. The next five sections of the training manual correspond to the five booklets included in *Safe Aid*. Each section includes:

- an introduction to the booklet topic,
- detailed explanations of important topics,
- a real-life scenario with questions designed to encourage group discussion,
- copies of the self-tests from each booklet with answer keys and
- posters, visual aids, group activities or other management tools for use in your food bank.

The appendices for the training manual list the location and phone numbers for the Extension Agents and Environmental Health Specialists (Sanitarians) located in each county in Montana. Numbers are also given for the office of the Montana State University Food and Nutrition Specialist and the State Food and Consumer Safety Bureau. These offices house food safety professionals who can provide specific details to answer additional food safety questions generated by your staff.

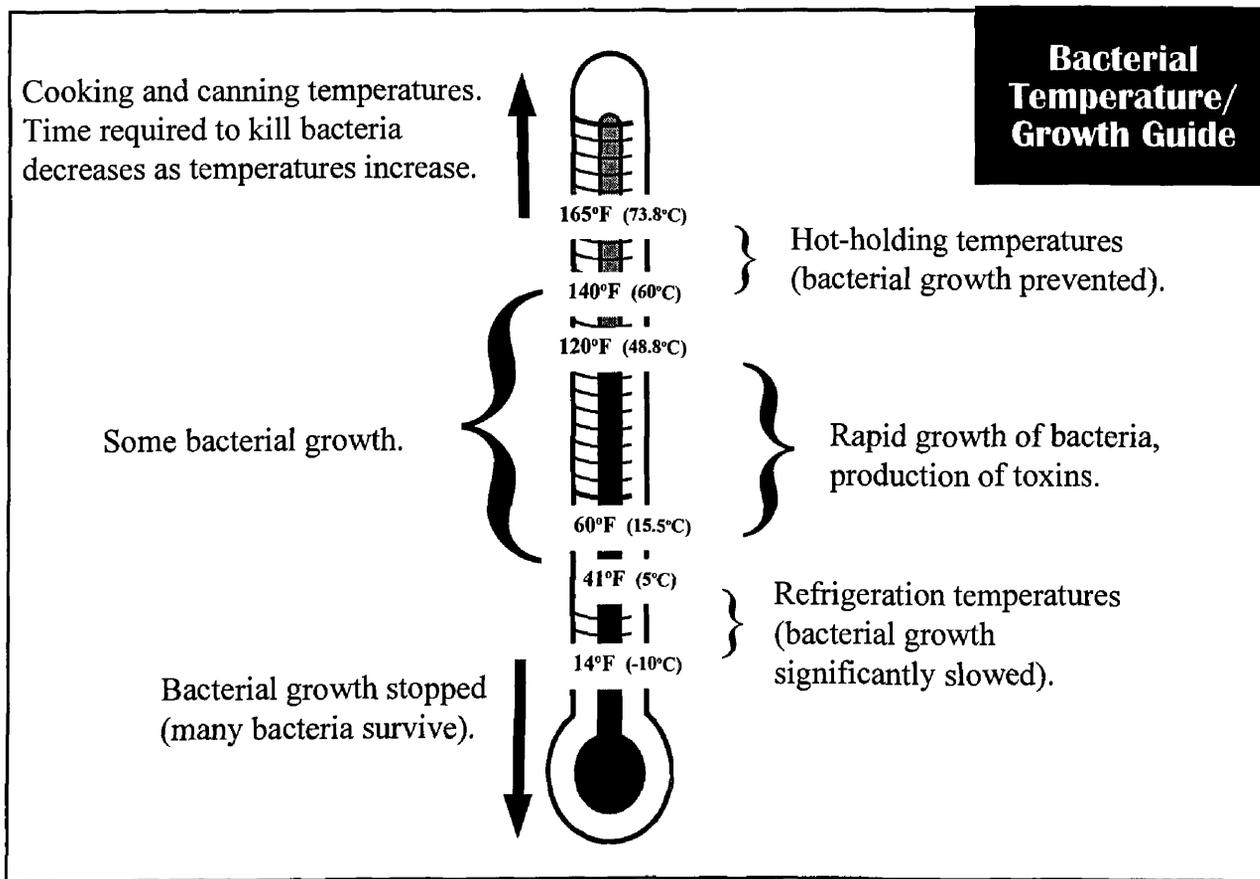
## 2. Teaching Booklet 1: Food Banks and Food-borne Illness

The Center for Disease Control estimates that approximately 6.5 million food-borne illnesses are reported in the United States each year. About 9,100 of these cases end in death. What makes these figures even more alarming is the fact that only one out of every three to ten cases of food-borne illness are reported. This means there may be 65 million cases of food-borne illness in the United States alone each year. The cost of medical expenses, lost wages, insurance and liability associated with food-borne illness is up to 4 billion dollars per year.

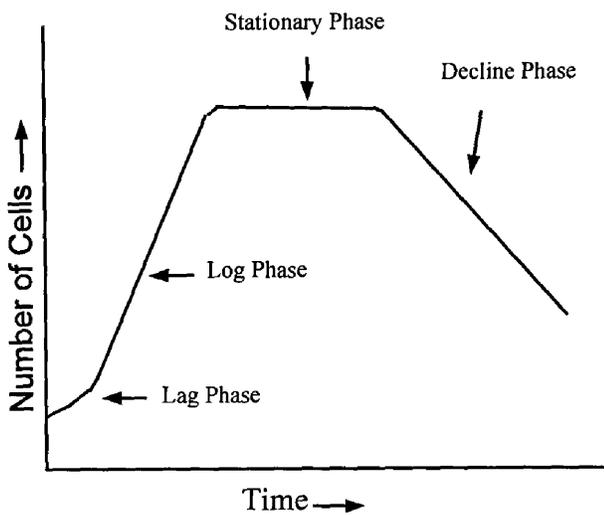
### Controlling Micro-Organisms

Bacterial growth can be limited by controlling food temperature, growth time, and conditions such as moisture, nutrients, acidity and oxygen. Temperature and time are perhaps the easiest to control. The illustration below shows the reaction of most bacteria to temperature.

When foods containing bacteria are held in a favorable temperature (60° to 120° F), the growth curve shown on page 4 begins. After an initial adjustment phase, bacterial growth is exponential.



## Bacterial Growth Curve



## Stages of Bacterial Growth Over Time

Bacterial growth can be charted in four phases, as shown to the left.

In the **lag phase**, bacteria which are introduced to food (by hand contact or other cross-contamination) adjust to their environment and begin to synthesize the components for growth.

During the **log phase**, the number of bacterial cells increases exponentially.

The **stationary phase** occurs when large numbers of bacteria cause competition for nutrients and space. During this phase the creation of new bacteria equals the rate of bacterial death.

When the competition for resources or the buildup of bacterial waste products causes the number of deaths to exceed the number of newly created cells, the population enters a **decline phase**. Some species of bacteria may die out entirely within a few hours. Others form spores or capsules with thick walls which are more resistant to heat, cold and chemicals and which can become vegetative (capable of growth and reproduction) when conditions are more favorable. Still others produce toxins, waste materials which may be poisonous to humans.

## A Case in Point

In 1992, counties throughout California received an emergency recall alert. A Mexican cheese product had resulted in a large number of deaths, miscarriages and illnesses. The culprit was *Listeria monocytogenes*, a bacteria which is found in soil and the intestinal tract of animals. The bacteria thrives in the cold, damp and salty environments which are generally found in cheese and ice cream plants. It loves to sequester itself in floor drains, under inadequately cleaned and sanitized equipment and nooks and crannies of walk-in refrigerator units. Even though dairy manufacturing plants are acutely aware of *Listeria* and its deadly potential, publicized cases and recalls happen almost yearly nationwide.

## Questions

1. Why is Listeriosis a dangerous food-borne illness?
  - ❖ Almost 1/4 of *Listeria* cases end in death.
  - ❖ In pregnant women, listeria can result in spontaneous abortion.
  - ❖ *Listeria* can grow in conditions which would limit most other bacteria (in temperatures down to 34°F and in salty foods).

Continued on Next Page

2. Can foods found in food banks be affected by Listeria?
  - ❖ Yes! In addition to dairy products, Listeria is found in. . .
    - a large number of vegetables, particularly those grown in or close to the ground.
    - 26% of potatoes.
    - 30% of fresh radishes.
    - more than 50% of raw ground beef, ground pork, ground veal and raw chicken legs.
3. What can food banks do to reduce the risk of spreading Listeriosis?
  - ❖ Use only pasteurized milk and milk products (cheese, yogurt, etc.).
  - ❖ Store cold foods well below 41°F.
  - ❖ Screen all donated foods. Always check the temperature of any food arriving at the food bank. If it is out of temperature, find out how long it was in transport and where and how long it was stored before donation.
  - ❖ Prevent cross-contamination (see Booklet 4, Safe Food Handling).
  - ❖ Distribute only vegetables that are whole or have been commercially processed.

## **Self Test Answers**

Booklet 1 contains two exercises: one on page 8, entitled “A Personal Approach”, and one on page 24, entitled “Self Test”. Copies of each exercise can be found on the following page. Answers to both exercises are listed below.

### **A Personal Approach**

1. Answers to question 1 will vary depending on which food a worker chooses. An example is chicken, which could contain organisms which cause *Staphylococcus*, *Salmonellosis*, *Campylobacteriosis*, *Listeriosis*, *Yersinosis*, *Shigellosis*, *Hemorrhagic Colitis* and *Chemical Food Poisoning*.
2. Again, this answer will vary. Food banks across Montana serve all of the at-risk populations listed in Booklet 1: malnourished people, young children, pregnant women, senior adults and chronically ill people.
3. The most serious consequences of food-borne illness are death and permanent disability.

### **Self Test**

1. Yes! Safe food handling is critical in food banks because of the number of people and the at-risk populations served.
2. A food-borne illness is any disease which is caused by eating food.
3. An “infective dose” is the dose of micro-organisms which cause a person to become ill.
4. No. Some bacteria may form toxins (poisonous waste products) which are heat resistant.
5. Most food-borne illnesses can be influenced by good personal hygiene or sanitation.
6. To reproduce, bacteria need favorable temperature, time, water, food, and chemistry.

## A Personal Approach

1. Choose 2 or 3 different foods stocked by your food bank and list all food-borne illness which could affect them (see example below).

### Item

### Possible Illnesses

A. *Chicken*

*Staphylococcus, Salmonellosis, Campylobacteriosis, Listeriosis, Yersiniosis, Shigellosis, Hemorrhagic Colitis, Chemical Food Poisoning*

B.

C.

D.

2. Which at-risk populations does your food bank serve? How would a food-borne illness affect them?
3. What are the most serious consequences of food-borne illness?

## Self Test

1. Is food safety important at a food bank? Why?
2. What is a food-borne illness?
3. What is an “infective dose”?
4. Can all food-borne illnesses be controlled by cooking food? (Hint: think about toxins.)
5. Which food-borne illnesses can be controlled by good worker hygiene?
6. What do bacteria need in order to reproduce?

As we discussed in the previous section, bacterial growth is controlled by several factors, including time and temperature. Another important variable in preventing an infective dose of bacteria is the amount of contamination.

Bacteria are everywhere: on your hands, on utensils, on work areas and on food coming into the food bank. Maintaining a clean and sanitary environment within the food bank is an important step in minimizing the possibility of cross-contamination and therefore reducing bacteria's total growth potential.

### **Dishwashing Procedure**

The dishwashing procedure outlined in Booklet 2 is precise in several of its requirements.

1. Dishwashing sinks must be either:
  - used for only dishwashing
  - or
  - thoroughly cleaned and sanitized before use in dishwashing.
2. Dishes must be scraped and pre-rinsed. (Pre-soak only if necessary since this provides another environment for bacterial growth.)
3. Dishes must be washed in 120°F (49°C) or hotter water with the amount of soap specified by the manufacturer.
4. After washing, dishes must be rinsed in warm (120°F or greater) clean water.
5. Dishes must then be sanitized by:
  - immersion in hot water (170°F, 76.7°C) for at least 30 seconds
  - or
  - immersion in warm water (75 - 120°F or 24 - 49°F) with a chemical sanitizer such as 50 ppm chlorine (1 tsp. of bleach per gallon of water) for 10 seconds.
6. Finally, dishes must be air dried and then stored in a clean, protected location.

Altering any of these steps can defeat the purpose of cleaning dishes and utensils, as illustrated on the following page.

## A Case in Point

Sandy, a new food bank volunteer shows up to work just before the afternoon rush for food baskets. The food bank administrator has no time to train her on client paperwork or making baskets, so she suggests that Sandy clean the kitchen area. With several years of experience, you are assigned to make baskets. While carrying baskets to the client reception area, you observe Sandy dump the contents of two unmarked tin cans into the sink to clear the drainboard. She then swishes water over the sink, puts in the drain plugs and fills the first compartment with lukewarm water and several squirts of liquid dish detergent. While the dishes are soaking, she adds cold water to the rinse compartment. She then washes, rinses and towel dries the dishes, stacking them on a cutting board which was used to repackage chicken. On your last trip by the dishwashing area, you notice that the dishwater is brown and clumpy.

### Questions

1. Should anything about Sandy's procedure concern you?

- ❖ Absolutely! Several things could have gone wrong. . .
- ❖ Sandy never washed her hands. Anything she brought into the food bank with her went straight into the dishwater.
- ❖ The unmarked tin cans could have contained toxics. Since the sinks were not adequately cleaned, any contamination could transfer to the dishes and utensils.
- ❖ The temperature on the wash and rinse compartments was not hot enough to insure that all particles were removed and suspended.
- ❖ "Several squirts" of dishwashing liquid is probably too much. Excess soap would lead to a less effective rinse and sanitization and might leave a film on the dishes.
- ❖ The water was not cleaned when it became dirty. Clouded water would have made the detergent less effective.
- ❖ There was no sanitization process. Pathogenic bacteria may have survived intact on the dishes. If food particles and moisture also remained on the dishes, Sandy has created the perfect environment for bacterial growth.
- ❖ Towel drying adds the possibility of cross-contamination (cloth surfaces soak up moisture and bacteria).
- ❖ The dishes could have been cross-contaminated by being placed on the soiled cutting board. The cutting board should have been washed, rinsed and sanitized before allowing any other food or food surface to contact it.

2. What should you do?

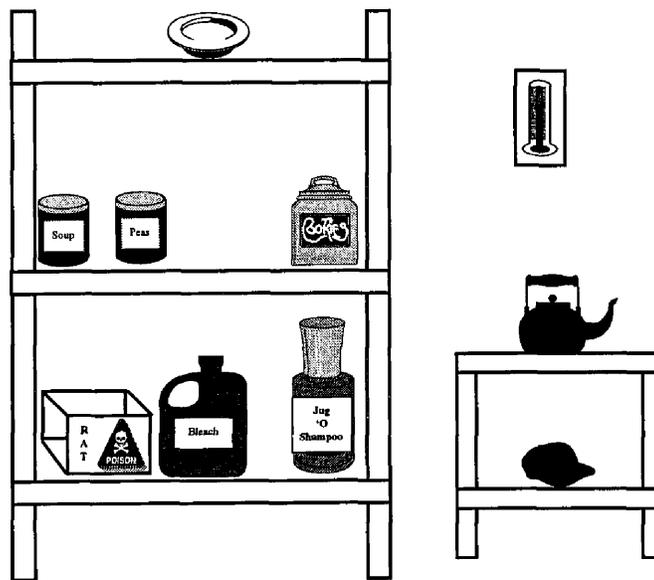
- ❖ Discuss it with the food bank administrator. Food banks are often short of help; you don't want to alienate a volunteer. Since unsafe dishes and utensils are a critical hazard, however, you will want to make sure that the dishes Sandy washed are re-cleaned and sanitized, and that Sandy receives proper training.

## Self Test Answers

Booklet 2 contains two exercises: one on page 15, entitled “Exercise: Planning Storage”, and one on page 32, entitled “Self Test”. Copies of each exercise can be found on the next page. Answers to both exercises are listed below.

### Exercise: Planning Storage

This exercise could have many acceptable outcomes, as long as food, dishes, personal items and chemicals are stored in separate areas. One possible configuration is shown below.

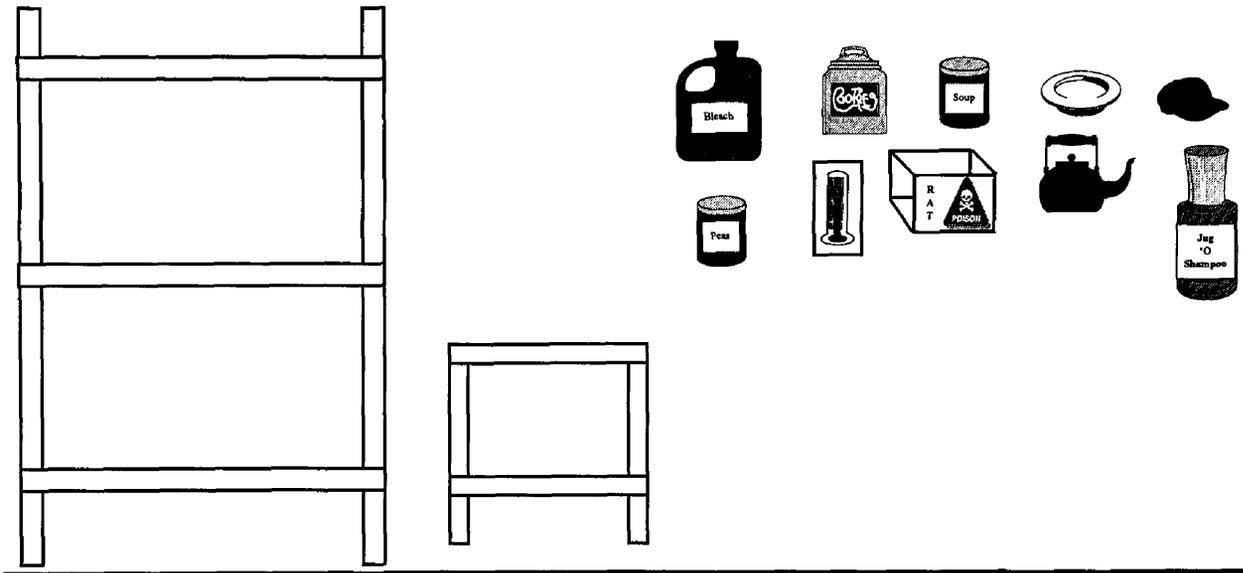


### Self Exam

1. D
2. A
3. B
4. C
5. D
6. D
7. B

## Exercise: Planning Storage (Page 15)

After reading the last several pages, test your knowledge. All of the items pictured below can be stored on or around the sets of shelves. Sketch each item where you think it belongs.



## Self Test (Page 32)

- To reduce heat and moisture, storerooms should be away from:
  - uninsulated steam and hot water pipes
  - heaters or water heaters
  - refrigeration condensing units
  - all of the above
- A fresh dishrag should be used:
  - every day
  - every other day
  - whenever the old one appears dirty
- Light "shields" are used to:
  - reduce the glare from florescent lights
  - prevent contamination if light bulbs burst
  - reduce the amount of heat generated by lights
  - prevent contamination by insects
- Dishwashing steps include:
  - washing, rinsing and drying
  - washing, rinsing, and sanitizing
  - scraping, washing, rinsing, sanitizing and air-drying
- Handwashing sinks should be located near:
  - the entry door
  - re-packaging operations
  - food preparation areas
  - b and c
- Which of the following should be found in the kitchen:
  - clients
  - kids
  - dogs
  - none of the above
- The optimal temperature for refrigerators is:
  - 0 to 32° F.
  - 34 to 40° F.
  - 40 to 45° F.
  - anything above 32° F.

## 4. Teaching Booklet 3: Risk Management

Booklet 3 explains a risk assessment process which factors in both the condition of a food container and the age of the food. The process indicates that any product with an obviously damaged package or a missing label should be discarded. Remaining items are then sorted into product groups and package types, dated, and cleaned and re-labeled if necessary.

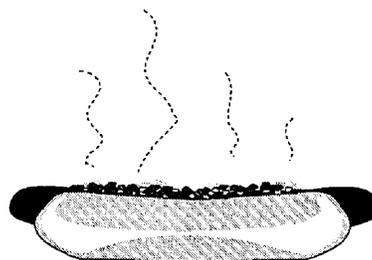
### Commercial Food Preservation

Microbiology: An Introduction, by Tortora et. al. reports several methods currently used by the food industry to insure preservation over long periods of time.

- ❖ **Commercial Sterilization** preserves foods by heating a sealed container to the point at which food is sterilized but food quality is not degraded. Appropriate temperatures are attained using pressurized steam in a closed container. Most canned goods are preserved in this way.
- ❖ **Pasteurization** is a mild heating process which selectively kills micro-organisms. A common temperature for the pasteurization of milk is 161.6°F (72°C) for 15 seconds.
- ❖ **Aseptic Packaging** uses packaging materials sterilized with a hot hydrogen peroxide solution (plastic or laminated paper) or superheated steam (metal). Liquid foods that have been conventionally sterilized are then poured into the sterile containers. The filled package is then sealed. An example of aseptic packaging is the juices boxes used in children's lunch boxes.

❖ **Low Temperature Preservation** is based on the principal that few pathogenic bacteria grow below 41°F (5°C). Most bacteria, even if not killed by low temperatures, become dormant (do not reproduce) when frozen. Some parasites, such as *Trichinella spiralis* (roundworms which cause Trichinosis), are killed by several days of freezing.

❖ **Chemical Preservatives** such as sodium benzoate, sorbic acid, calcium proportionate and sodium nitrate are added to some foods to retard spoilage. Hot dogs and sausage are two examples of foods to which chemical preservatives are added.



## A Case in Point

The Oregon State University Extension Service reported the story of a couple who stopped at a roadside cafe while travelling on vacation. The wife ordered a baked potato and upon receiving it, noticed that it had not been cooked well and was not hot. She was so hungry that she ate it anyway. The next afternoon she experienced problems with vision and equilibrium. By evening, her eyes were swollen almost shut. Toward morning she woke with her left side paralyzed and her tongue swollen. Her husband took her to the hospital, but the doctors could not diagnose the problem.

They decided to fly her to a larger hospital. The doctor at the second hospital had already been researching her symptoms and upon her arrival immediately administered a botulism anti-toxin. Before it could take effect, her diaphragm became paralyzed — she couldn't breathe. Her neck was swollen even with her shoulders and her tongue was so large that it no longer fit in her mouth. She could feel everything but couldn't move anything. The doctors immediately shoved a breathing tube down her nose. They were not able to give her anesthesia for the tube or for the following tracheotomy and feeding tube operations. In spite of the intense pain, the woman was unable to speak or scream.

The woman was lucky; she survived. Most victims of botulism don't. Five years later, she still has difficulty speaking. She can't cry, because she has no tears. She can eat only limited food because she has no saliva. She still has problems with her lungs, with muscle coordination, and with a pervasive weakness. Her medical bills today are over a quarter million dollars. All of this agony could have been prevented if someone hadn't been careless with food.

### Questions

1. Many people who work with food don't consider food-borne illness to be a serious threat. Their food could never cause food-borne illness and even if it did, they argue, it wouldn't cause anyone too much trouble. Do you agree?
  - ❖ No! All food-borne illness should be taken seriously. Almost all food-borne illnesses can cause death in at-risk populations (people whose health is already poor). Many food-borne illnesses can cause complications that threaten the lives of even the most healthy people.
2. What causes Botulism?
  - ❖ Botulism is caused by *Clostridium botulinum*, a bacteria found in soil, dust and the intestinal tract of animals. *C. botulinum* is an obligate anaerobe, a bacteria that is unable to survive in its vegetative form in the presence of oxygen. Botulism is therefore found in low-oxygen foods such as improperly canned foods, and foods such as baked potatoes which are held at room temperature. (Tin foil creates a low-oxygen environment.)
3. How can food banks reduce the risk of spreading botulism?
  - ❖ Food banks should avoid home-canned foods and donated foods which create a low-oxygen environment (such as wrapped baked potatoes or garlic stored in oil).

## Group Activity

In order to practice risk assessment protocols, divide your staff and volunteers into groups of 3 to 4 people. Provide each group with a variety of containers (food, pet food, medicine, cleaner, etc.). If possible, include damaged containers and unlabelled products. Have each group sort and assess the containers, determine which need to be destroyed, cleaned or re-labelled and assign a keep date for each item. When the exercise is completed, have a spokesperson from each group explain their choices.

---

## Exercise Answers

Answers to the exercises for booklet 3 are listed below. Copies of the exercises may be found on the next page.

### Exercise: Designing a Label (p. 9)

A local food bank uses a commercial canning facility to can fresh carrots received from California. Design a label for the carrot cans.

- ❖ A label could be designed in several ways. Minimally, it should include:
  - ◆ the name of the product (“Carrots”),
  - ◆ an ingredients list, including any preservatives added (ex. “Carrots, water, salt, benzoic acid”),
  - ◆ the packager’s name and address (ex. “packaged by Good Hope Food Bank, Missoula MT”)
  - ◆ the net weight (ex. “16 oz.”), and
  - ◆ an expiration date (ex. “4/2/99”).

It could also include serving instructions and a lot number.

### Risk Assessment Exercise (pg. 22)

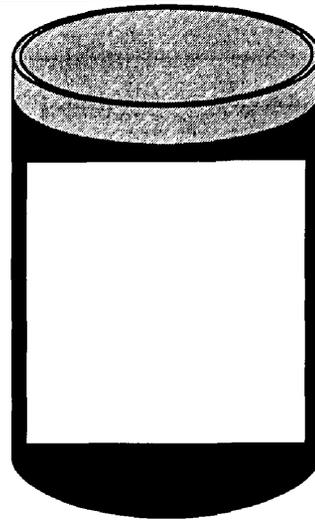
1. Discard
2. Discard
3. Discard
4. Keep
5. Keep
6. Discard
7. Discard
8. Keep
9. Discard

### Self Test (pg. 32)

- A. 3
- B. 2 and 4
- C. 4
- D. 1
- E. 1 and 2

## 5. Exercise: Designing a Label

A local food bank uses a commercial canning facility on weekends to can fresh carrots received in bulk from California. How would you design a label for the carrots?



## 11. Risk Assessment Exercise

Using what you've learned from the last several pages, would you keep or discard the following packages?

Keep   Discard

1. A jar of Aunt Jane's home-canned green beans
2. A jar of mayonnaise with a small crack
3. A sack of flour with small, irregular holes around the base.
4. A can of nacho cheese with a slight dent located away from seams
5. A jar of peanut butter with a cracked lid and safety seal intact
6. Commercially canned peas with bulging ends
7. A half-full bottle of salad dressing
8. A box of cereal with a torn box and intact liner.
9. A can with no label

## 15. Self Test

A. How long could you keep a bottle of Ranch Dressing that is already 2 months past its expiration date?

1. 18 months
2. 12 months
3. 16 months
4. 36 months

B. What "organoleptic" (sensory organs) means should you use to examine food?

1. taste
2. smell
3. sound
4. sight

C. Which of the following are signs that a product should be discarded?

1. mold
2. slime
3. discoloration
4. 1, 2 & 3

D. Which of the following bread conditions are safety concerns?

1. moldy
2. stale
3. flattened
4. crumbly

E. Which of the following materials can be used to denature food?

1. ivory soap
2. bleach
3. hot water

## Sample Checklist

In designing an individual risk management program, each food bank should create their own checklist, a guide by which workers can determine whether a food is safe to keep. An example of a risk assessment checklist is shown below. Any item checked “Yes” would indicate that the food should be discarded.

<u>No</u>	<u>Yes</u>	<u>Criteria</u>
<input type="checkbox"/>	<input type="checkbox"/>	1. Does the food look or smell suspicious?
<input type="checkbox"/>	<input type="checkbox"/>	2. Has the product been opened before it arrived at the food bank?
<input type="checkbox"/>	<input type="checkbox"/>	3. Does the package show signs of insect or rodent infestation?
<input type="checkbox"/>	<input type="checkbox"/>	4. Is the package obviously damaged, stained or leaking?
<input type="checkbox"/>	<input type="checkbox"/>	5. Are product safety seals or strips missing?
<input type="checkbox"/>	<input type="checkbox"/>	6. Is the product label missing or incomplete?
<input type="checkbox"/>	<input type="checkbox"/>	7. If the food must be refrigerated, is the temperature above 41°F? Has it been out of temperature for more than 2 hours?
<input type="checkbox"/>	<input type="checkbox"/>	8. If the product is frozen, is it still solid?
<input type="checkbox"/>	<input type="checkbox"/>	9. Was any part of product transport unsafe?
<input type="checkbox"/>	<input type="checkbox"/>	10. Is there evidence of mold or foreign objects in the food?
<input type="checkbox"/>	<input type="checkbox"/>	11. Is the product expiration date outside of acceptable limits?
<input type="checkbox"/>	<input type="checkbox"/>	12. Is there any reason to believe that the food has not been handled safely?

Booklet 4 gives guidelines for personnel practices, temperature control, storage conditions, and preventing cross-contamination. All of these areas are critical control points for maintaining food safety. Personnel practices are especially important since they indicate a staff member's or volunteer's overall awareness of food safety.

### Supervising Personal Hygiene

An explanation of personal hygiene requirements should be part of every staff member's and volunteer's orientation to the food bank. Although this may feel awkward initially, it is much easier to handle up front than after a problem exists. Hygiene rules that are a standard, written part of orientation can easily be worded so that they don't make anyone feel singled out.

Hygiene rules should be written in simple, straight-forward language and reinforced by signs posted at appropriate places (in the bathroom, over the handwash sink and in employee areas.) The rules should cover areas such as:

- ❖ the location at which all personal items should be stored (i.e. a locker area or shelf away from food, dishes, and single-use products).
- ❖ the appropriate place to take a break, smoke or chew gum (away from food prep areas).
- ❖ a strict rule that a worker with any signs of disease may not work with food. (See box to the right for more information.) 
- ❖ appropriate personal grooming (clean hair and bodies, hair pulled back or covered, clean clothes, minimal jewelry and clean, trimmed nails).
- ❖ times when handwashing is **required** (before working with food or food contact items, after any possibility of contamination and between each task).
- ❖ appropriate use of single-use gloves and utensils to minimize hand-to-food contact.

### Restrictions for Sick Volunteers or Staff Members

■ **Workers who are diagnosed with Salmonellosis, Shigellosis, Hemorrhagic Colitis (E. Coli) or Hepatitis A virus** should be excluded from any work at the food bank because these diseases are highly infectious and the medical consequences are severe.

■ **Workers who have symptoms such as diarrhea, fever, vomiting, jaundice or sore throat with fever** or who have been exposed to one of the four diseases listed above should not be allowed to work with food, equipment, utensils, linens or single service items. They could, however, work in positions not directly related to food.

■ **Workers who have cuts or lesions that are open or draining** must wear adequate protection on the cuts. This would include:

- ◆ a bandaid and single use gloves for infected cuts on a worker's hands.
- ◆ an impermeable cover to protect cuts or lesions on the exposed parts of the arm.
- ◆ a dry, durable, tight-fitting bandage covering cuts or lesions or boils on any other part of the body.

## A Case in Point

A Health Inspector observes the following situation during normal business hours at a food bank. Polly and Albert are setting up the kitchen to re-package the bulk hotdogs that they received from the Lion's Club. Polly sets the hotdogs out on the counter, then goes to get a bucket of sanitizer to clean the work surfaces. Albert notices that the trash can is full and takes the filled bag to the dumpster. He returns and puts a new liner in the trash can. Before they can begin re-packaging, Susan asks them to help fill out paperwork for a group of 20 new clients that arrived together.

An hour later, Polly and Albert return to the kitchen. Polly carefully washes, rinses, sanitizes and air dries all of the utensils that they will need, as well as the dirty dishes piled up near the sink. Albert sanitizes all of the counters. Terry, Albert's brother, peeks his head in the back door to talk. Polly joins in the discussion while the dishes are drying. Terry's cat, Patches, sneaks in around his feet and jumps up on the counter to be petted by Albert. Albert absently pets Patches, but shoos him out the door when the cat hair causes him to sneeze. Polly fishes a diet coke out of her purse, takes a drink and sets it on the table.

Thirty minutes later, Polly and Albert are ready to begin repackaging operations. They lay out the 1 quart baggies (several that Polly has recycled as well as a new box), a sharp knife, the cutting board that was used this morning to cut melons, some masking tape and a waterproof marker to label the new packages. The Health Inspector clears her throat and asks if she can talk to them before they open the hot dogs.

### Questions

1. Why do you think the Health Inspector is concerned?
  - ❖ The hot dogs have been out of temperature for over two hours.
  - ❖ Albert and Polly never wash their hands! Albert handles the trash, works with clients, pets the cat and sneezes. He could be bringing contamination from each of these sources to the work area and to the hot dogs.
  - ❖ Terry and Patches the Cat should not have been allowed in the kitchen area. Anything that Patches walked through could have been tracked onto the counter.
  - ❖ The counter was not sanitized after Patches walked on it and Albert sneezed on it.
  - ❖ Polly is drinking in the kitchen area. Food and drink should only be allowed in a designated break area.
  - ❖ Baggies should never be recycled for food use; they are single-use items only.
  - ❖ The cutting board was not cleaned and sanitized before use. Any pathogens on the melon rinds would have been sitting in a perfect environment to reproduce and are now ready to contaminate the hot dogs.

## Self Test Answers

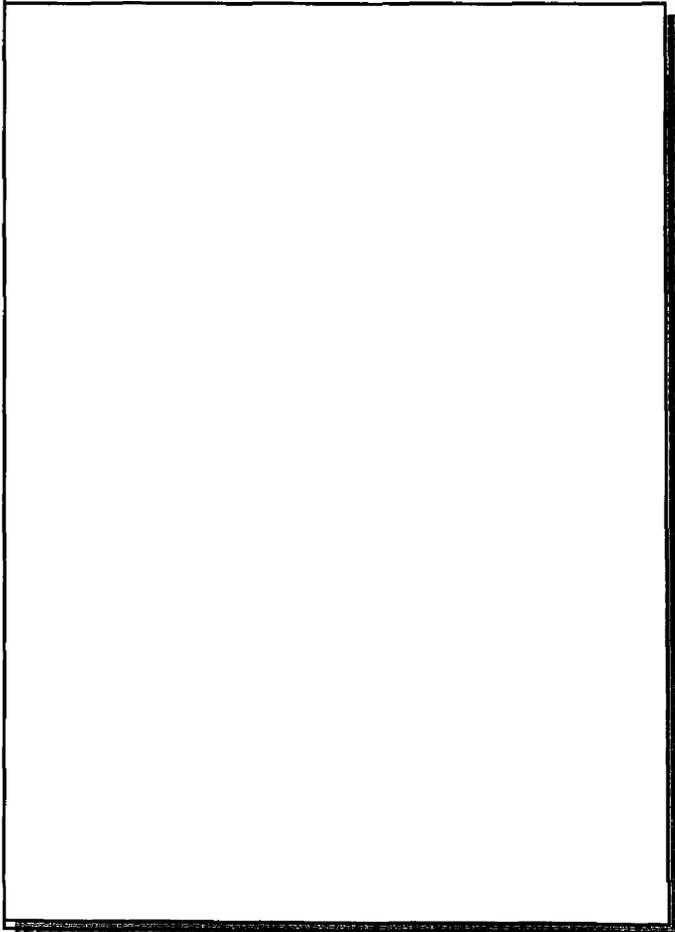
Booklet 9 contains two exercises: one on page 8, entitled “Exercise: Floor Plan”, and one on page 20, entitled “Self Test”. Copies of each exercise can be found below. The answers to the Self Test are 1.) D, 2.) D, 3.) B, 4.) B, 5.) A.

### 6. Self Test

1. In what cases is eating or smoking allowed in a food preparation area?
  - A. In-between tasks
  - B. On very cold days
  - C. Always
  - D. Never
2. When should disposable gloves be worn?
  - A. When working with food that will not be cooked or washed again
  - B. Always
  - C. Whenever a worker has cuts, scrapes or infections
  - D. A and C
3. How long should workers scrub hands between tasks?
  - A. under 10 seconds
  - B. at least 20 seconds
  - C. for 1 minute
  - D. any amount of time
4. What is the safe temperature zone for food?
  - A. between 41°F and 140°F
  - B. At or below 41°F and at or above 140°F
  - C. between 65°F and 165°F
5. How long may food be out of temperature?
  - A. less than 2 hours
  - B. between 1 and 3 hours
  - C. less than 6 hours

### 3. Exercise: Floor Plan

In the square provided below or on a blank piece of paper, diagram your food bank. If worker areas are not currently designated, locate a place for a break area and for an employee storage area. Also show where the handwashing sink is located and how it is reached from work areas. When you've drawn the floor plan, use arrows to show how the food flows from receiving to storage to re-packaging, etc.



## 6. Teaching Booklet 5: Re-packaging Bulk Foods

Re-packaging is the most complex food operation in most food banks. Planning for safe re-packaging must consider every aspect of food safety that we have discussed in booklets 1 through 4.

In booklet 5, the concept of prevention-based planning is introduced. HACCP (Hazard Analysis and Critical Control Points) was developed in the 1960's by NASA to improve quality control for food production. HACCP takes into consideration the factors which contribute to most outbreaks and the risk assessment techniques needed to identify and prioritize hazards. It treats the production of food as a total continuous system, from harvest through storage, preparation, service and consumption.

HACCP is based on seven principles:

1. **Identify potentially hazardous foods.** The hazard may be caused by biological (bacteria, viruses or parasites), chemical (naturally occurring or added during processing) or physical (foreign objects such as glass, metal or plastic) means.

Identification of hazardous foods takes into account both the likeliness that a hazard will occur and the severity of the problem if it does occur. To be effectively addressed, the specified problem must have a solution for prevention, elimination, or reduction.

When hazardous foods and processes have been identified, a flow chart showing all of the steps in the food process should be created. Booklet 5 shows how to create a HACCP flow chart.

2. **Identify critical control points.** Critical control points are steps in the food preparation procedure at which control can be applied and a food safety hazard can be prevented or reduced to acceptable levels. Most of the steps on a flow chart will be control points (a point at which you can control biological, chemical or physical factors), but only a few will be critical control points (points where control can reduce the identified hazard). Critical control points are often associated with:
  - personal hygiene (glove use, handwashing, eating, drinking, smoking, etc.),
  - time and temperature (during refrigeration, transport, etc.),
  - cooking, cooling, reheating, holding, and
  - cross contamination (during re-packaging, storage, etc.).

The critical control points are indicated on a HACCP flow chart by marking "CCP".

3. **Establish control procedures.** Each critical control point should have a critical control limit assigned to it. For example, if you are re-packaging refrigerated food,

the critical control limit could be “food stored at < 41°F. Other critical control points could include handwashing or glove use. When you establish a control procedure, you must decide how the critical limit can be measured (ex. periodic temperatures taken by a stem probe thermometer or spot check of operations to assure glove use). Control procedures should address the specific hazard and should be written beside the CCP on the flow chart.

4. **Establish monitoring procedures.** After you determine CCPs and set critical limits, a procedure must be set up to monitor the CCPs and insure that they are within the limits. For example, you may determine that food temperature in the refrigerator should be checked daily and marked down on a log which is posted on the refrigerator door. One person should be responsible for each CCP and should initial the log when the data has been entered. Filled log sheets should be filed so that a permanent record is established.
5. **Establish corrective actions.** Corrective actions are your plan for what happens when a critical control limit is exceeded. For example, if food temperature within the refrigerator is above 41°F, you may turn the refrigerator to a colder setting or store cooling food in shallower pans. You also need to determine the procedure for an unacceptable exceedance of critical control limits. For example, if food has been out of temperature for more than 2 to 4 hours, it may need to be denatured (using bleach or ivory soap) and discarded.
6. **Establish effective record-keeping procedures.** The records that you need to keep with a HACCP system are listed below.
  - A copy of your written HACCP Plan. This plan will include your flow diagram and should address each hazardous food or operation. It should also include a description of how the product will be used (ex. is it intended for babies or single adults? Is it cooked before use so that there will be an additional kill step for pathogens?). The plan must clearly identify the CCPs, the critical limits for each CCP, the person or team assigned to monitor critical limits and your corrective action plan. Finally, it should include your monitoring procedure and your implementation strategy.
  - All monitoring logs should be kept, as well as a record of any corrective actions taken.
  - Records of any training session that you hold to explain HACCP responsibilities to staff or volunteers should also be recorded.
7. **Establish procedures to verify** that the HACCP plan is working. These procedures will include review of your monitoring logs. They could also include supervisor spot checks and consultations with a Health Inspection or other health specialist.

## Group Activity

In order to train your staff and more permanent volunteers on HACCP, consider making Booklet 5 a reading assignment (this should take approximately 30 minutes), then break into teams to design a HACCP plan for 1 or 2 of your foods/processes. This will give workers a more practical knowledge of HACCP and will help plan a few of your flow diagrams at the same time.

### 6. Self Test (page 9)

- A. Which information is not required on a label?
1. Product name
  2. Picture of product
  3. Net weight
  4. Ingredients
- B. Which method below is an acceptable way to dispose of unusable food?
1. Throw it in the garbage
  2. Flush it down the toilet
  3. Feed it to the neighborhood dogs
  4. Denature it with bleach or ivory soap and discard
- C. Which container would cool food the quickest?
1. A 5-gallon plastic tub
  2. A 6-inch tall metal pan
  3. A 2-inch tall metal pan

#### True or False

- T F Paper bags are good re-packaging containers.
- T F Baggies may be re-used if they are washed and sanitized.
- T F Jars or tubs which are re-used should be washed, rinsed, sanitized with 50 ppm chlorine and air dried.
- T F Jars with only small chips may be used as long as they don't leak.
- T F Gloves or utensils should be used to avoid hand-to-food contact when re-packaging.

### Self Test Answers

- A. 2  
B. 4  
C. 3

#### True or False

- F  
F  
T  
F  
T

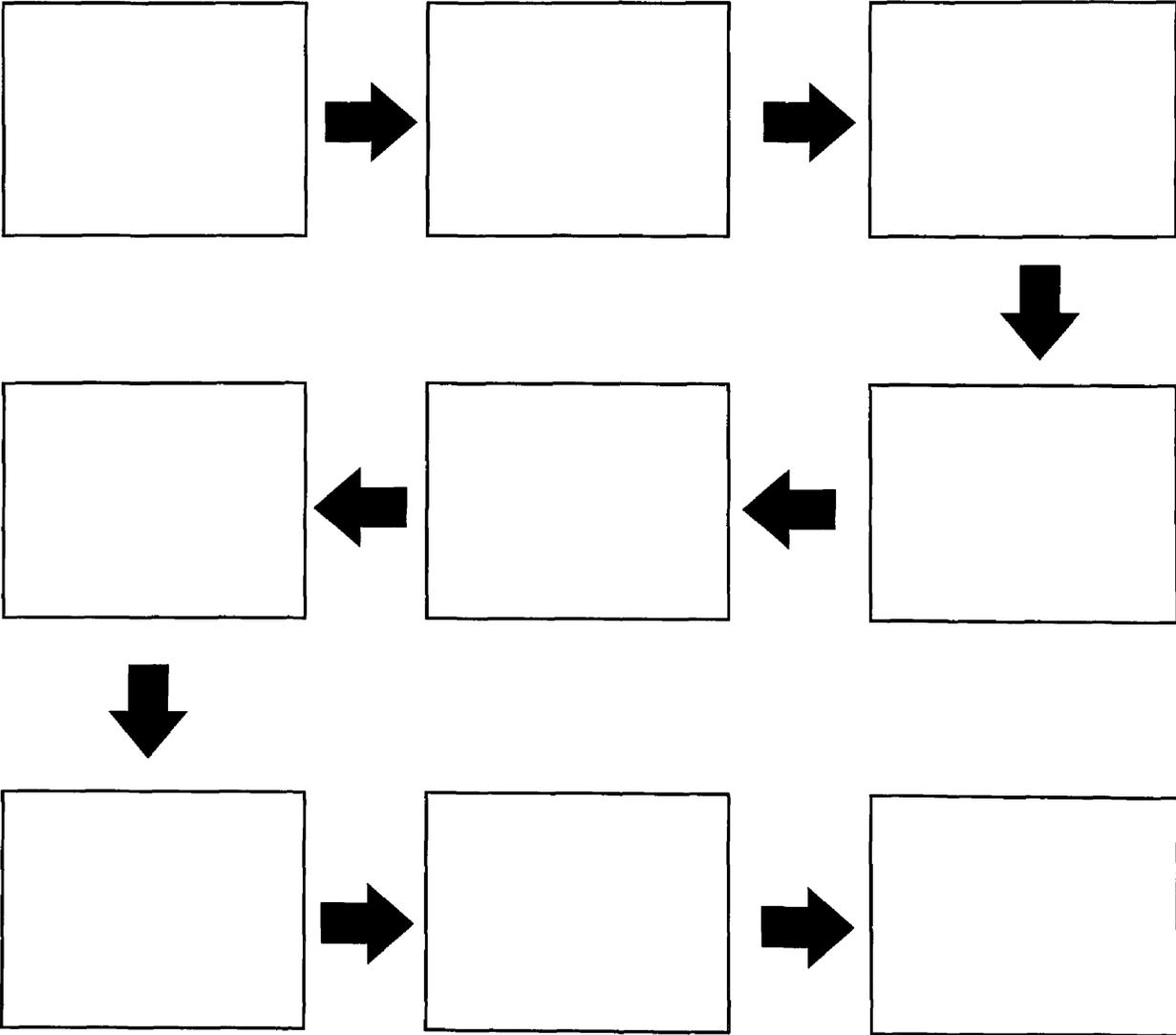
### Forms

The following three pages contain blank forms which may be used to design a food bank HACCP plan.

# HACCP Flow Chart

Product: \_\_\_\_\_

Date: \_\_\_\_\_



## HACCP Flow Chart Worksheet

Date:

Product:

Ingredients:

STEP	Problem/Hazard	CCP	Control/Solution
<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 5px;"></div> <div style="text-align: center;">↓</div>			
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<div style="border: 1px solid black; width: 100%; height: 40px;"></div>			

## Equipment Monitoring Chart

**Week Ending:**

Equipment:	Sunday		Monday		Tuesday		Wednes.		Thursday		Friday		Saturday	
	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
Freezer #1														
#2														
Refrigerator #1														
#2														
Product #1														
#2														
#3														
Deliveries #1														
#2														
#3														
Sanitizer #1														
#2														
#3														
#4														

## **Appendix A: Food Safety Resources**

## Food Safety Resources

<u>County</u>	<u>Location</u>	<u>Health Department</u>	<u>Extension Agent</u>
Beaverhead	Dillon	683-4868	683-2842
Big Horn	Hardin	665-1005	665-1405
Blaine	Chinook	357-3310	357-3200, 357-2359
Broadwater	Townsend	266-3443	266-3419
Carbon	Red Lodge, Joliet	446-1694	962-3522
Carter	(Baker)	778-3329	N/A
Cascade	Great Falls	454-6950	454-6980
Chouteau	(Havre), Ft. Benton	265-5481 ext. 66	622-3751, 622-5553
Custer	Miles City	232-7800 ext. 50	233-3370
Daniels	(Plentywood), Scooby	765-2310 ext. 316	487-2861
Dawson	Glendive	365-5772	365-4277
Deer Lodge	Anaconda	563-8421 ext. 230	563-4035
Fallon	Baker	778-3329	778-2883 ext 40
Fergus	Lewistown	538-7466	538-3919, 538-7611
Flathead	Kalispell	758-5760	758-5553
Flathead Reservation	Pablo		657-2700 ext. 362
Ft. Bellknap Reservation	Harlem		353-2205 ext. 484
Gallatin	Bozeman	582-3120	582-3280
Garfield	(Hardin), Jordan	665-1156	557-2770
Glacier	Cut Bank	873-4461	873-2239
Golden Valley	(Lewistown)	538-7466	323-2704
Granite	(Anaconda), Philipsburg	563-8421 ext. 230	859-3771, 859-3304
Hill	Havre	265-5481 ext. 66	265-5481 ext. 33
Jefferson	Boulder	225-4251	323-2704
Judith Basin	(Lewistown), Stanford	538-7466	566-2270, 2277, 8, 9 ext. 104, 105
Lake	Polson, Ronan	883-7236	676-4271
Lewis & Clark	Helena	447-8351	447-8346
Liberty	(Havre), Chester	265-5481 ext. 66	759-5625
Lincoln	Libby	293-7781 ext. 228	293-7781 ext. 211, 212
McCone	(Sidney), Circle	482-2207	485-2605
Madison	Virginia City	843-5392	287-3282
Meagher	Bozeman	585-9016	582-3280
Mineral	Superior	822-4632	822-3545, 3546, 3547
Missoula	Missoula	523-4755	721-4095
Musselshell	(Lewistown), Roundup	538-7466	323-2704
North Cheyenne Res.	Lame Deer		477-6498
Park	Livingston	222-6120 ext. 262	222-4156, 222-4157
Petroleum	(Lewistown)	538-7466	538-3919, 538-7611
Phillips	Malta	654-2565	654-2543
Pondera	Conrad	278-3247	278-4054
Powder River	(Miles City), Broadus	232-7800 ext. 50	436-2424
Powell	Deer Lodge	846-3680 ext. 21	846-3680 ext. 19, 20
Prairie	(Glendive), Terry	365-5772	637-2121
Ravalli	Hamilton	363-6206	363-2044
Richland	Sidney	482-2207	482-1206
Roosevelt	Wolf Point, Culbertson	653-1590 ext. 22	787-5312
Rosebud	Forsyth	356-2156	356-7320
Sanders	Thompson Falls	827-4396	827-4394

## Food Safety Resources, cont.

<u>County</u>	<u>Location</u>	<u>Health Department</u>	<u>Extension Agent</u>
Sheridan	Plentywood	765-2310 ext. 316	765-2310
Silver Bow	Butte	723-3274	723-8262 ext. 226
Stillwater	Columbus	322-5237	322-5334
Sweet Grass	(Columbus),Big Timb	322-5237	932-5146
Teton	Conrad, Choteau	468-2573	466-2491, 466-2492
Toole	Shelby	434-5032	434-5351
Treasure	Hardin	665-1156	323-2704
Valley	Glasgow	228-8221 ext. 64	228-8221 ext. 41
Wheatland	(Lewistown)	538-7466	N/A
Wibaux	(Glendive), Wibaux	365-5772	795-2486
Yellowstone	Billings	256-2757	252-1595

## Montana State University Extension Service

Food and Nutrition Specialist  
Montana State University Extension Service  
Bozeman, MT 59717

(406) 994-5702

## State Food and Consumer Safety Bureau

Helena State Office:

Cogswell Building  
P.O. Box 200901  
Helena, MT 59620-0901

(406) 444-2408

Billings Regional Office:

Rm C314-BF & CSB EMC, Box 108  
1500 N. 30th St.  
MSU-Billings, Box 108  
Billings, MT 59101-0298

(406) 657-2294

## **Appendix B: References**

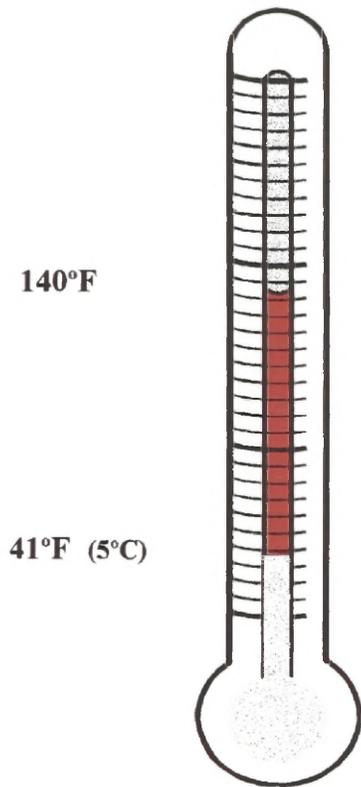
## References

- FDA, Department of Health and Human Services. Current Concepts in Food Protection. Rockville, MD. 1987.
- Haynes, Deborah C. ed. The Food Bank Sourcebook. Montana Food Bank Network: Missoula, April 1984.
- Michigan State University Extension. Operation Risk: Reducing the Incidence of Sick Kids Through Safe Food Handling. 1993.
- Montana Food Bank Network. The Food Bank Sourcebook: Everything You Need to Know About Starting and Running a Local Food Bank. Apr. 1984.
- Montana State University Extension System. SAFE: Food Handling Education Program for Food Service Workers. Bozeman, MT. Jul. 1992.
- Purdue University Cooperative Extension Service. Safe Food for the Hungry. 1994.
- The Food Bank Incorporated. Pantry Pointers: Healthful Hints for Your Pantry. Hatfield, MA. Dec. 1992.
- Tortora et. al. Microbiology: An Introduction.
- University of Massachusetts Cooperative Extension Program. Safe Food At Home: A Food Safety Train-the-trainer Program. USDA Project 93-EFSQ-4077.
- University of Massachusetts Medical Center. Healthy Food for Shelters and Soup Kitchens. 1992.
- University of Vermont Extension Service and New Hampshire Cooperative Extension. SAFE: Safety Awareness in the Food Environment. USDA Special Project 91-EFSQ-1-4003. 1993.

# *Safe Aid*

## **Section J: Posters**

# Safe Aid: Playing It Cool

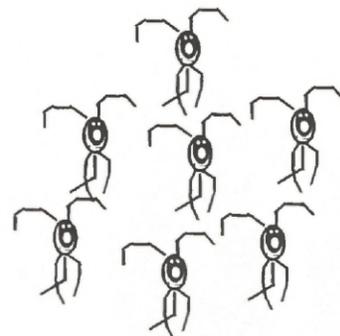
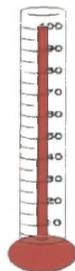


## *Danger Zone*

- ⊘ No food in this range for > 2 hours.
- ⊘ No food thawed in this range.
- ⊘ No food accepted from delivery in this range without a temperature history.

---

## Remember:



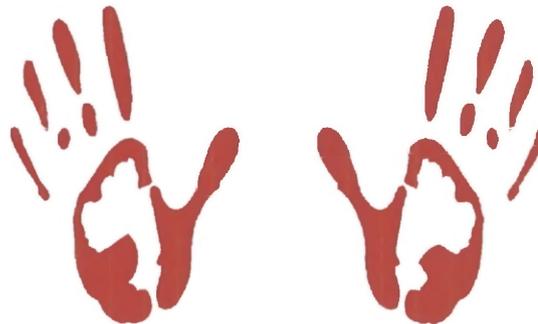
**Contamination + Temperature + Time = Bacterial Growth**

(Adapted from the *Safe Aid* Series, Montana State University Extension Service, 1996)

# *Safe Aid: Cleaning Up Your Act (Part I)*

## Wash Hands . . . . . **OFTEN!**

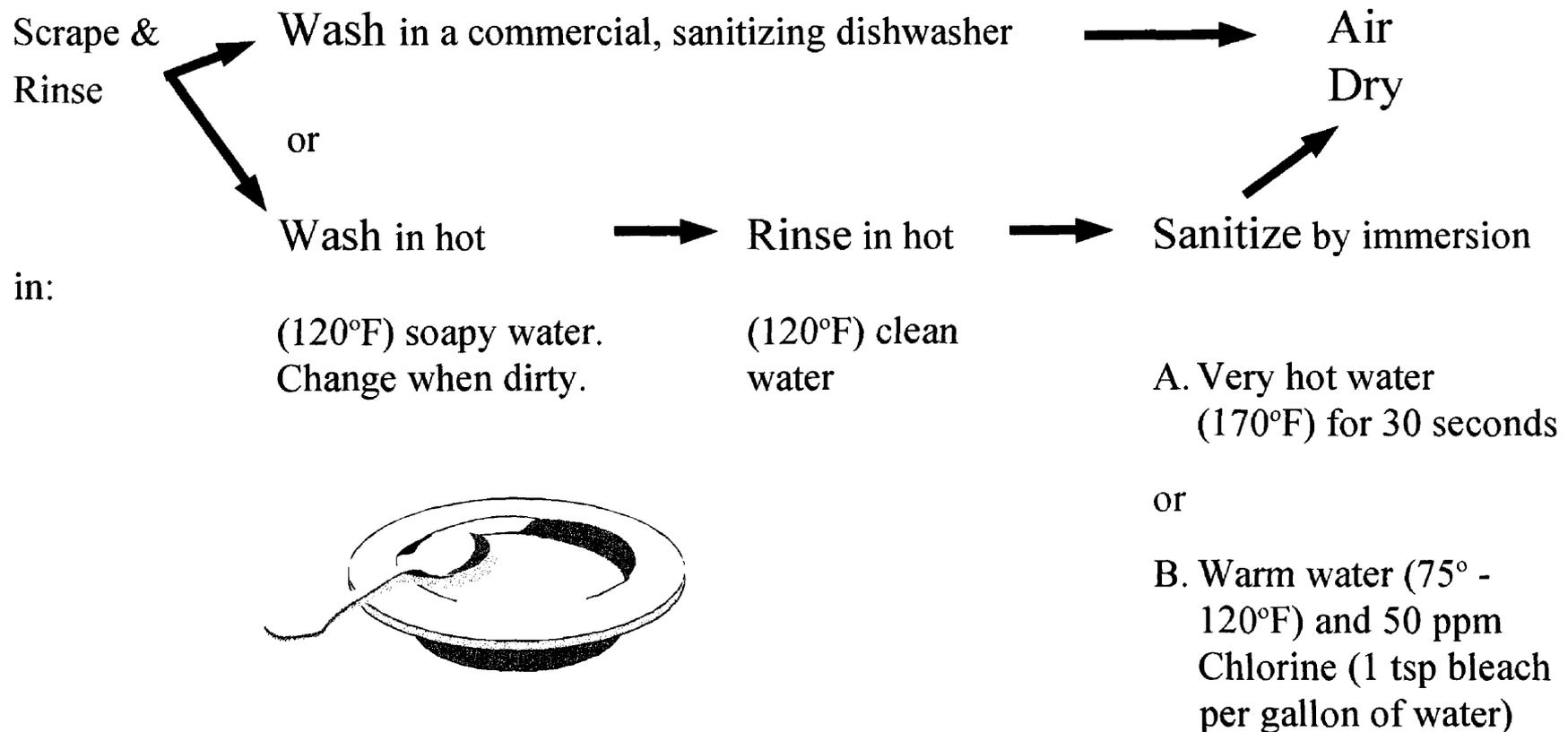
1. Use warm water and anti-bacterial soap.
2. Lather and rub vigorously for at least 20 seconds.
3. Rinse.
4. Dry with a paper towel.



- ◆ Before handling food
- ◆ After handling trash or trash containers
- ◆ After using the bathroom or changing diapers
- ◆ After coughing, sneezing or nose blowing
- ◆ After smoking
- ◆ After handling toxics or poisons
- ◆ After handling raw meat, poultry or eggs
- ◆ After handling pencils, paper, money, etc.
- ◆ After touching the floor or a contaminated surface

# *Safe Aid: Cleaning Up Your Act* (Part II)

## Clean and Sanitize All Dishes



(Adapted from the *Safe Aid* Series, Montana State University Extension Service, 1996)

# SafeAid REFRIGERATOR/FREEZER STORAGE GUIDE

## FOOD

### STORAGE TIME

		In Refrigerator (34-40°F)	In Freezer (0°F)
Baked Goods:	cakes	6 months	
	cheesecake	5 days	1 months
	cookies	12 months	
	custard-filled pastries	2-3 days	NR*
	donuts	6 months	
	fruit cake	12 months	
	pie, pastries		6 months
	pie shell, unbaked		6 months
	quick bread, cakes		4 months
	yeast bread, rolls		6 months
Bread:	fresh	1 month	12 months
	frozen dough		6 months
Butter		6 weeks	12 months
Cheese (soft):	cottage cheese	2 weeks	NR
	ricotta	2 weeks	6 months
	cream	3 weeks	4 months
Cheese (hard):	Swiss, Cheddar, etc. (unopened)	6 months	6 months
	(opened)	1 month	4 months
	(chunks)	1 month	4 months
	(slices)	2 weeks	4 months
	Parmesan/Romano	12 months	18 months
Cream		7 days	NR
Eggs:	in shell	6 weeks	NR
	whites, yolks	3 days	12 months
Fish:	uncooked	2 days	6 months
	cooked	2 days	3 months
Frozen Deserts (ice cream, etc.)			6 months
Fruits (fresh)	blueberries, cherries	1-2 weeks	24 months
	strawberries	7 days	24 months
	bananas	1-2 weeks	
	apples, cranberries,	8 months	24 month
	melons and pears	2 weeks	24 month
	avocados, grapes, peaches	2 months	
	citrus fruit (grapefruit,	2 months	6 month
	tangerines, oranges,		
	lemons, limes)		
	other fruit	2-4 week	12 month
Fruits (canned):	opened	1 week	NR
Game meat:	deer	3-5 days	18 months
	rabbit	3-5 days	12 month
	duck & goose (whole, wild)	3-5 days	6 month
Jellies, Jams:	repackaged or opened	6 months	NR
Juices	1 week	30 months	
Margarine	12 month	30 month	
Mayonnaise:	repackaged or opened	3 month	NR
Meat (fresh beef, pork, lamb):	chops, roasts, steaks	3-5 days	24 months
	ground, stew, variety	1-2 days	12 months

\* NR = not recommended because it leads to a poor quality product



*Safe Aid* REFRIGERATOR/FREEZER STORAGE GUIDE (page 2)

**FOOD**

**STORAGE TIME**

		<b>In Refrigerator (34-40°F)</b>	<b>In Freezer (0°F)</b>
Meat	cooked & meat dishes	5 days	6 months
	gravy & meat broth	5 days	6 months
	bacon, frankfurter, etc, unopened	14 days	6 months
	bacon, frankfurter, etc, opened	7-10 days	NR
	sausage, fresh/smoked	3-5 days	6 months
	canned ham, unopened	6-9 month	NR
	canned ham, opened	3-5 days	3 months
	casseroles, mixed dishes	3-5 days	6 months
	dried	12 months	
	unopened lunch meat, vacuum-pack	25 days	6 months
	unopened lunch meat, non-vacuum	14 days	6 months
	hot dogs	2 months	12 months
	ham	1 week	6 months
	sausage, fresh pork	1 week	6 months
	variety (liver, etc.)	2 days	6 months
Milk:	fluid	10 days	3 month
	buttermilk	14 days	3 month
Nuts (shelled or unshelled)	6-12 month.	18-24 month.	
Poultry:	fresh (whole chicken & turkey)	3-5 days	12 months
	fresh (chicken pieces)	2-3 days	9 months
	fresh (turkey pieces)	2-3 days	9 months
	duck & goose (whole)	3-5 days	6 month
	giblets	2-3 days	4 month
	cooked, covered w/ broth or gravy	2 days	6 months
	pieces not in broth or gravy	3-4 days	6 months
	casseroles, mixed dishes	3-4 days	6 months
	fried chicken	3-4 days	6 months
	Seafood:	fish steaks and fillets	1-2 days
shellfish		1-2 days	6 months
Sour Cream	3 weeks	NR	
T.V. Dinners & main dishes	2 days	6 months	
Tofu	7 days	4 months	
Vegetables:	carrots, Jerusalem artichokes	3 months	
	sweet potatoes, cabbage	8 months	
	uncut squash	12 months	
	asparagus, cauliflower, mushrooms, green peppers, tomatoes, broccoli, green beans, green peas, spinach, cut squash	4 weeks	
	lima beans, lettuce, cucumbers	1-3 weeks	
	sweet corn, egg plant, ripe	7-14 days	
	salad greens	1-2 wks	NR
	canned, opened	5-7 days	NR
	frozen, commercial		24 month
	Yogurt	2-3 weeks	NR

\* NR = not recommended because it leads to a poor quality product



## *Safe Aid* SHELF STORAGE GUIDE

### FOOD

### Maximum Storage Time at 50-70° F

Baking Powder	24 months
Baking Soda	36 months
Baby food (jar or formula)	12 month
Beans, Peas, Lentils, dried	36 months
Bottled foods	36 month
Bouillon cubes, envelopes	12 month
Bread, fresh*	2 weeks
Bread Crumbs, dry (sealed)*	6 months
Cakes, donuts	2-10 days
Canned Goods, general	24-36 months
Catsup, chili sauce (opened)	1 month
Cereal Grains, whole:	
cornmeal or grits*	12 months
oatmeal	18 months
barley, etc.	36 months
Cereals (cold):	
boxes, unopened	12-18 months
boxes, opened	2-3 months
repackaged	12 months
Cereals (hot):	
unopened	18 months
repackaged	12 months
individually packaged (ex. instant)	18 months
Cheese, Grated Parmesan	10 months
opened*	1-2 months
Chocolate:	
dark*	18 months
milk chocolate*	12 months
semisweet	18 months
unsweetened	18 months
syrup	24 months
syrup, opened*	12 months
cocoa and cocoa mixes	24 months
Coconut	18 months
Coffee:	
regular or instant, unopened	18 months
regular, opened*	12-18 months
instant, opened*	24-36 months
Coffee Lighteners, powder	18 months
opened	6 months
Condiments:	
ketchup, mustard, relish, mayonnaise,	12 months
opened or repackaged condiments	6 months
sauces: pepper, worchestershire, steak and meat	24 months
opened or repackaged sauces	12 months
Cookies:	
bakery	1-2 weeks
packaged	12 months
packaged, opened	1 month
Cornstarch	24 months
Crackers	12 months
opened	2 month
Diet Products, instant breakfasts	12 months
Dressings:	
mixes	36 months
prepared, dairy-based	18 months
prepared, other	36 months
prepared or mix, opened*	3 months
Dry goods, general	18 months past date
Flour:	
white	18 months
whole wheat*, rye*	12 months
Frosting:	
canned	12 months
mix	18 months
Fruit and Juice:	
citrus, canned**	12 months
other, canned**	36 months
dried*	24 months



## Safe Aid SHELF STORAGE GUIDE (page 2)

### FOOD

### Maximum Storage Time at 50-70° F

Gelatin:	flavored	18 months
	unflavored	36 months
Honey		36 months
Jellies, Jams**		36 month
Meat and Fish:	canned	36 months
	canned ham*	18 months
Milk**:	condensed, evaporated*	12 months
	nonfat, dry	24 months
	nonfat, dry, opened*	9 months
	condensed or dry, hydrated**	5 days
Mixes:	casserole, gravy, soup, pancakes, biscuits, cookies, cakes, muffins, pie crust, puddings, soup, rice, pancake, potato, etc.	12-18 months
	drinks (kool-aid, lemonade)	18 months
	Molasses	36 months
Nuts:	canned	24-36 months
	in shell or packaged	6 months
	canned or packages, opened*	3 months
Oils and Shortening		36 months
	opened*	6 months
Pasta:	spaghetti and macaroni	36 months
	egg noodles	24 months
Peanut Butter		24 months
	opened*	3 months
Pectin, liquid or powdered		24 months
Pickles, olives		24 months
Pies and pastries, packaged (non-custard style)		3-10 days
Popcorn and Chips:	unpopped popcorn	36 months
	popped popcorn and chips	6 months
	popcorn and chips, opened/repackaged	1 month
Rice:	white	24 months
	brown*	3 months
	flavored or herb	6 months
Seasonings:	herbs and spices	36 months
	pepper, salt	36 months
	vanilla and other extracts	24 months
	vanilla and other extracts, opened	12 months
Soft Drinks		12 months.
Soup, canned:	tomato or tomato based	12 months
	other	24 months
Snacks:	bagged	6 months
	canned	36 months
Sugars:	white	36 months
	artificial sweetener	36 months
	brown, confectioners	24 months
Syrups:	corn, maple, berry, etc., unopened	24 months
	corn syrup, opened*	6 months
	maple syrup, opened*	12 months
Tea:	bags, box	36 months
Toaster pop-ups		3 months
Vegetables:	canned or dried, general	36 months
	tomatoes & sauerkraut, canned	18 months
	fresh onions or potatoes	8 months
	squash, hard-shelled	8 months
Vinegar		24 months



\* Store in refrigerator for best quality or longer storage time

\*\* Must be refrigerated after opening

\*\*\* Unless otherwise specified, these are the MAXIMUM recommended storage times for unopened packages.