

***Public Health Reasons
for the
Retail Food Establishment
Sanitation Requirements
Title 410 IAC 7-24***



Indiana State
Department of Health

***Food Protection Program
Indiana State Department of Health
2 North Meridian Street
Indianapolis, IN 46204
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Public Health Reasons/Administrative Guidelines

This document is constructed as an educational aid to apply the “2005 FDA Model Food Code Public Health Reasons” to sections 110 through 451 of the IC 410 IAC 7-24 Retail Food Establishment Sanitation Requirements Rule. Not every section has an individual public health reason. The document is formatted to match the structure of the Indiana Retail Food Establishment Sanitation Requirements, hereafter referred to as the “Rule”. It may be helpful at times to refer to similar sections of the 2005 FDA Model Food Code. This *Public Health Reasons/Administrative Guidelines* (PHR) document can be used to support decisions, improve the knowledge level of staff, and to educate or advise retail establishments on best practices. Throughout this document are web references that are recommended for use to support recommendations.

Key to Abbreviations

ANSI- American National Standards Institute	PIC- Person-in-Charge
CFH -Certified Food Handler	RA- Regulatory Authority
CFP- Conference for Food Protection	RFE- Retail Food Establishment
HSP- Highly Susceptible Population	ROP-Reduced Oxygen Packaged
PHF- Potentially Hazardous Food	RTE- Ready-to-Eat

MANAGEMENT & SUPERVISION

410 IAC 7-24-110 Requirement for facility and operating plans

410 IAC 7-24-111 Contents and specifications for facility and operating plans

In conjunction with the CFP Plan Review committee, FDA has participated in developing a document that is intended to assist regulators in reviewing retail food establishment plans, and industry in understanding what is expected in the plan review process. For several years, this FDA/CFP Food Establishment Plan Review Guide – 2000 has been used in the FDA State Training Team Plan Review courses. It can be accessed through <http://www.cfsan.fda.gov/~dms/prev-toc.html>. The Plan Review Questionnaire developed by the Department is recommended for use when evaluating plans (<http://www.in.gov/isdh/20640.htm>).

At the plan review stage, the regulatory authority may be dealing with an agent of the permit applicant who is seeking a building permit and who is not in a position to discuss plans for safely conducting the food operation. Nonetheless, the plan review step presents a unique opportunity to lay a foundation that enables the proposed operation to proactively sustain compliance with the Rule over time. Standard operating procedures (SOPs) are a part of that foundation and ideally are developed in tandem with designing the facility. Consequently, as an integral part of the plan review process, discussion needs to occur about such procedures and their scope.

SOPs need to be developed by the time of the preoperational inspection and put into effect when the food operation begins. It is recommended that such procedures be written, available for reference by the PIC, conveyed to the appropriate employees, and available for review by the regulatory authority during inspections. Operating procedures should include definitive practices and expectations that ensure that:

- (1) The transmission of foodborne disease is prevented by managing job applicants and food employees as specified under sections 120-127.
- (2) Food is received from approved sources as specified under section 142
- (3) Food is managed so that the safety and integrity of the food from the time of delivery to the establishment throughout its storage, preparation, and transportation to the point of sale or service to the consumer is protected,
- (4) The time or temperature control of PHF is maintained, including freezing, cold holding, cooking, hot holding, cooling, reheating, and serving in conformance with the temperature and time requirements specified under sections 152, 162, 163, 182, 183, 185-199.
- (5) Warewashing is effective, including assurance that the chemical solutions and exposure times necessary for cleaning and sanitizing utensils and food-contact surfaces of equipment are provided as specified under sections 248, 276, 287, 295, 296, and 298-303, and

- (6) Records that are specified under sections 159, 160, and 356, are retained for inspection.

During the plan review stage, the regulatory authority and a management representative of the proposed retail food establishment should discuss available training options that may be used to train food employees and the PIC regarding food safety as it relates to their assigned duties. By the time of the preoperational inspection, operating procedures for training should include definitive practices and expectations of how the management of the proposed retail food establishment plans to comply with & section 119 (12) of the Rule which requires the PIC to assure that food employees are properly trained in food safety as it relates to their assigned duties.

410 IAC 7-24-112 Food equipment; certification and classification

Under ANSI document CA-1 ANSI Policy and Criteria for Accreditation of Certification Programs, it has been stipulated that:

"For food equipment programs, standards that establish sanitation requirements shall be specified government standards or standards that have been ratified by a public health approval step. ANSI shall verify that this requirement has been met by communicating with appropriate standards developing organizations and governmental public health bodies."

The term "certified" is used when an item of food equipment has been evaluated against an organization's own standard. The term "classified" is used when one organization evaluates an item of food equipment against a standard developed by another organization.

410 IAC 7-24-114 Variance

The ISDH variance policy describes the process for submitting a request for a variance and for approving, denying, and revoking a variance of certain Indiana State Department of Health food safety rules. The policy applies to each request for a variance submitted by a person on behalf of a retail food establishment(s) or proposed retail food establishment(s) operated or intending to operate in the State of Indiana, except that variances shall not be considered for temporary retail food establishments. It also applies to persons to whom a variance has been granted or revoked.

ISDH Food Protection Program Variance Policy

Purpose

This policy describes the process for submitting a request for a variance and for approving, denying and revoking a variance of certain Indiana State Department of Health rules.

Scope

This policy applies to each request for a variance submitted by a person on behalf of a food establishment(s) or proposed food establishment(s) operated or intending to operate in the State of Indiana, except that variances shall not be considered for temporary food establishments. It also applies to persons to whom a variance has been granted or revoked.

Law

IC 16-19-3-4.3

Sec 4.3. Upon a showing of good cause, the executive board may grant a variance from one (1) or more of the state rules concerning;

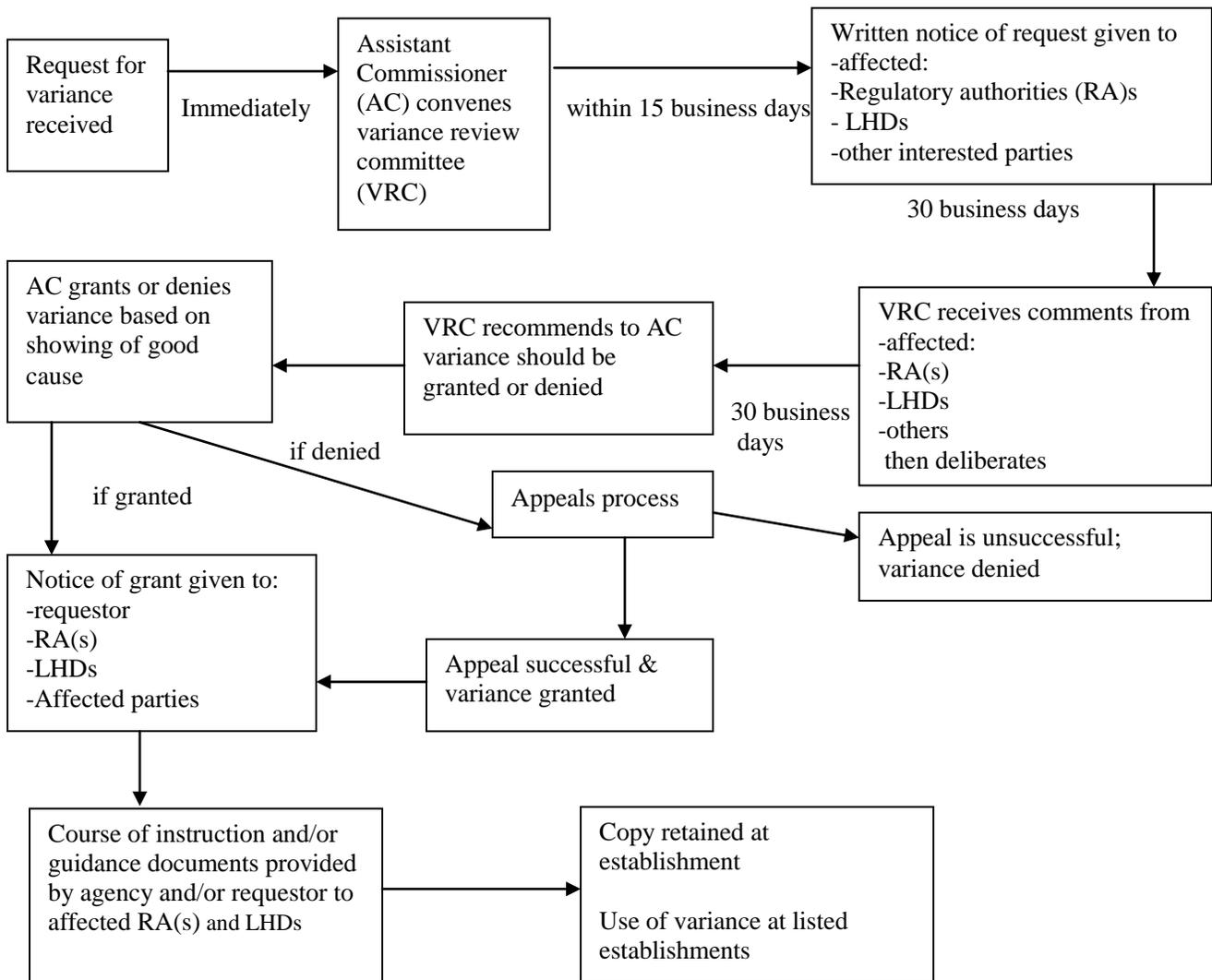
- (1) food handling machinery; or
- (2) sanitary standards for the operation of food establishments.

IC 16-42-5-5.2

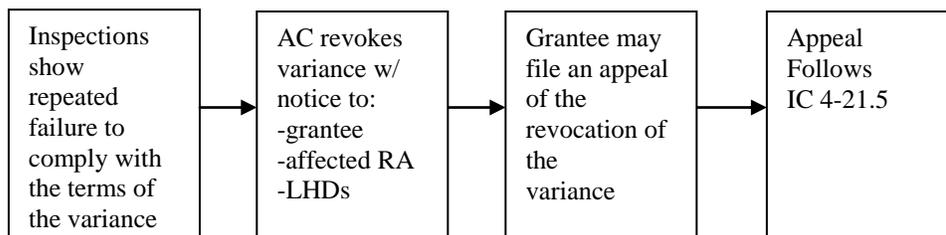
Sec. 5.2. The state department may grant a variance from one (1) or more of the state rules concerning:

- (1) food handling machinery; or
- (2) sanitary standards for the operation of food establishments in accordance with IC 16-19-3-4.3.

Section 114–Process for Variances



Section 114– Variance Revocation Process. (Indiana Policy as of June 2006)



410 IAC 7-24-117 Assignment of supervision responsibility

Designation of a PIC during all hours of operations ensures the continuous presence of someone who is responsible for monitoring and managing all retail food establishment operations and who is authorized to take actions to ensure that the Rule's objectives are fulfilled. During the day-to-day operation of a retail food establishment, a person who is immediately available and knowledgeable in both operational and Rule requirements is needed to respond to questions and concerns and to resolve problems.

410 IAC 7-24-118 Demonstration of Knowledge

The restaurant industry accounts for 5% of the gross domestic product, employing 12.8 million people. The 935,000 U.S. restaurants generate \$537 billion in sales and provide 70 billion meals and snacks annually (2007), with an average of \$1,054 annual per capita spending on the five meals or snacks per week. According to the Healthy People 2010, "Objective 10: Food Safety", one of the major issues that affect foodborne illness, is "training of retail employees".

The use of safe practices spelled out in the U.S Public Health Service's FDA Food Code should reduce outbreaks. Considering the number of meals consumed in restaurants, food safety *must* be a very important activity for all food employees and owners. CDC monitoring data estimates that 76 million illnesses, 325,000 hospitalizations, and 5000 deaths each year may be associated the microorganisms in food. The FDA reported that 59% of reported illness outbreaks were associated with restaurants in 2005. FDA research has identified three main factors that result in foodborne illness: poor personal hygiene, cross contamination, and time/temperature control. Food-handler error is the main cause (1), (2).

1. Howells, AD; Roberts, KR; Shanklin, CW; Pilling, VK; Brannon, LA; Barrett, BB. Restaurant Employees Perceptions of Barriers to Three Food Safety Practices. *JADA*, 2008; 108:8:1345-1349.
2. United States Department of Health and Human Services, Healthy People 2010. <http://www.healthypeople.gov>

The designated PIC who is knowledgeable about foodborne disease prevention, Hazard Analysis and Critical Control Point (HACCP) principles, and Rule requirements is prepared to recognize conditions that may contribute to foodborne illness or that otherwise fail to comply with the Rule requirements, and to take appropriate preventive and corrective actions.

There are many ways in which the PIC can demonstrate competency. Many aspects of the food operation itself will reflect the competency of that person. A dialogue with the PIC during the inspection process will also reveal whether or not that person is enabled by a clear understanding of the Rule and its public health principles to follow sound food safety practices and to produce foods that are safe, wholesome, unadulterated, and accurately represented.

The Rule does not require reporting of uninfected cuts or reporting of covered, protected infected cuts/lesions/boils since no bare hand contact with RTE food is a Rule requirement.

Many food protection manager and food handler certification programs have shared a desire to have the food manager certificates they issue universally recognized and accepted by others – especially by the increasing number of regulatory authorities that require food manager certification.

A mechanism has been needed for regulatory authorities to use in determining which certificates should be considered credible based on which certificate issuing programs meet sound organizational and certification procedures and use defensible processes in their test development and administration.

After a multi-year effort involving a diversity of stakeholder groups, the CFP completed work on its Standards for Accreditation of Food Protection Manager Certification Programs found at <http://www.foodprotect.org>. In 2002, the Conference entered into a cooperative agreement with ANSI to provide independent third-party evaluation and accreditation of certification bodies determined to be in conformance with these Conference standards. ANSI published its first listing of accredited certifiers in 2003.

The Acting Commissioner of the FDA, in his address before the 2004 biennial meeting of the CFP for Food Protection, commended this Conference achievement and encouraged universal acceptance based on the CFP/ANSI accreditation program.

Distributed at this meeting was the following letter addressed to the Conference Chair and signed by the Director of FDA's Center for Food Safety and Applied Nutrition. The letter puts forth the Agency's basis for its support of universal acceptance of food protection manager certifications.

"The 2004 biennial meeting of the Conference for Food Protection is a fitting occasion for FDA's Center for Food Safety and Applied Nutrition to commend the Conference for its significant achievements in support of State and local food safety programs.

The FDA in a Memorandum of Understanding recognizes the Conference for Food Protection as a voluntary national organization qualified to develop standards to promote food protection. Conference recommendations contribute to improvements in the model FDA Code and help jurisdictions justify, adopt and implement its provisions.

Conference mechanisms involving active participation by representatives of diverse stakeholder groups produce consensus standards of the highest quality. An excellent example is the Conference's Standards for Accreditation of Food Protection Manager Certification Programs, and its announcement of the new on-line listing of accredited certifiers of industry food protection managers. Many years in their development, these Conference standards identify the essential components necessary for a credible certification program. Components cover a wide range of requirements, such as detailed criteria for exam development and administration, and responsibilities of the certification organization to candidates and the public.

FDA applauds the Conference for this significant achievement, and encourages agencies at all levels of government to accept certificates issued by listed certifiers as meeting their jurisdictions' food safety knowledge and certification requirements. The American National Standards Institute (ANSI) has independently evaluated these certification programs under an agreement with the Conference for Food Protection. Governments and industry widely recognize and respect ANSI as an accrediting organization. ANSI has found certifiers it lists as accredited <http://www.ansi.org/> under "conformity assessment" – "personnel certification accreditation" to conform to the *Conference's Standards for Accreditation of Food Protection Manager Certification Programs**.

The Food Code states the person in charge of a food establishment is responsible for developing, carrying out, and enforcing procedures aimed at preventing food-borne illness. Section 2-102.11 (*Section 118 in 410 IAC 7-24*) states that one means by which a person in charge may demonstrate required knowledge of food safety is through certification as a food protection manager by passing an examination that is part of an accredited program".

FDA encourages food regulatory authorities and others evaluating credentials for food protection managers to recognize the Conference for Food Protection/ANSI means of accrediting certification programs. This procedure provides a means for universal acceptance of individuals who successfully demonstrate knowledge of food safety. The procedure provides officials assurance that food safety certification is based on valid, reliable, and legally defensible criteria. In addition, universal acceptance eliminates the inconvenience and unnecessary expense of repeating training and testing when managers work across jurisdictional boundaries.

FDA, along with State, local, tribal, and other Federal agencies and the food industry, share the responsibility for ensuring that our food supply is safe. It is anticipated that this new Conference for Food Protection/ANSI program will lead to enhanced consumer protection, improve the overall level of food safety, and be an important component of a seamless national food safety system."

*ANSI's "Directory of Accredited Personnel Certification Programs utilizing Conference for Food Protection (CFP) Standards" may be viewed on-line by going to

<https://www.ansica.org/wwwversion2/outside/ALLdirectoryListing.asp?menuID=8&prgID=8&status=4>.

Additional information may be found at:

<https://www.ansica.org/wwwversion2/outside/CFPgeneral.asp?menuID=8>.

The Indiana food Rule states the PIC of a retail food establishment is responsible for developing, carrying out, and enforcing procedures aimed at preventing food-borne illness. Section 118 states that one means by which a PIC may demonstrate required knowledge of food safety is by having a certified food handler (CFH) who has passed an examination that is part of an accredited program. The PIC of a retail food establishment exempt from the CFH rule (410 IAC 7-22) may demonstrate knowledge by having no critical violations during an inspection or by correctly answering food safety questions during an inspection.

410 IAC 7-24-119 Duties of the person-in-charge

A primary responsibility of the PIC is to ensure compliance with the Rule requirements. Any individual present in areas of a retail food establishment where food and food-contact items are exposed presents a potential contamination risk. By controlling who is allowed in those areas and when visits are scheduled and by assuring that all authorized persons in the establishment, such as delivery, maintenance and service personnel, and pest control operators, comply with the Rule requirements, the PIC establishes an important barrier to food contamination.

Tours of food preparation areas serve educational and promotional purposes; however, the timing of such visits is critical to food safety. Tours may disrupt standard or routine operational procedures, and the disruption could lead to unsafe food. By scheduling tours during non-peak hours the opportunities for contamination are reduced. Section 119 (a) (12), “employees are properly trained in food safety as it relates to their assigned duties”, allows industry to develop and implement operational-specific training programs for food employees. It is not intended to require that all food employees pass a test that is part of an accredited program.

410 IAC 7-24-120 through 127 Employee Health

Overall Goals

The purpose of these sections of the Rule is to reduce the likelihood that certain viral and bacterial agents will be transmitted from infected food workers into food. The agents of concern are known to be readily transmissible via food that has been contaminated by ill food workers, and so for that reason, are the primary focuses of the Employee Health sections of the Rule. However, there are different levels of risk associated with different levels of clinical illness. The structure of the restrictions and exclusions has, therefore, been designed in a tiered fashion depending on the clinical situation to offer the maximum protection to public health with the minimal disruption to employees and employers.

Four levels of illness or potential illness have been identified with the first level being the highest potential risk to public health and the fourth level being the lowest. The first level relates to employees who have specific symptoms (e.g., vomiting, diarrhea, jaundice) while in the workplace. These symptoms are known to be associated commonly with the agents most likely to be transmitted from infected food workers through contamination of food. The first level also relates to employees who have been diagnosed with typhoid fever or an infection with hepatitis A virus (within 14 days of symptoms). The second level relates to employees who have been diagnosed with the specific agents that are of concern, but who are not exhibiting symptoms of disease because their symptoms have resolved. The third level relates to employees who are diagnosed with the specific agents, but never develop any gastrointestinal symptoms. The fourth level relates to those individuals who are clinically well but who may have been exposed to a listed pathogen and are within the normal incubation period of disease.

The most significant degree of restriction and exclusion applies to the first level of food employee illness. Infected food employees in the first level are likely to be excreting high levels of their infectious pathogen, increasing the chance of transmission to food products, and thus on to those consuming the food. The first level includes food employees who are:

- Experiencing active symptoms of diarrhea or vomiting – with no diagnosis,
- Experiencing jaundice within the last 7 days-- with no diagnosis,
- Diagnosed with typhoid fever, or any other *Salmonella* infections
- Diagnosed with hepatitis A within 7 days of jaundice or 14 days of any symptoms, or
- Experiencing active symptoms of diarrhea or vomiting, and diagnosed with norovirus, *E. coli* O157:H7 or other enterohemorrhagic *Escherichia coli* (EHEC) or Shiga toxin-producing *Escherichia coli* (STEC), or *Shigella* spp. infection.

Diagnosis with typhoid fever or hepatitis A virus is included in level 1 because employees diagnosed with these pathogens are likely to be shedding high levels of the pathogen in their stool without exhibiting gastrointestinal symptoms. Peak levels of hepatitis A viral shedding in the feces typically occurs before symptoms appear. Diarrhea and vomiting are reliable indicators of infection with norovirus, *E. coli* O157:H7 or other EHEC, and *Shigella* spp, but are not typical symptoms of typhoid fever or hepatitis A. For example, employees diagnosed with typhoid fever are

more likely to experience constipation, rather than diarrhea. Jaundice is also not always reliable as an indicator of a hepatitis A infection because employees can be infected with hepatitis A virus without experiencing jaundice (anicteric employees).

Maximum protection to public health requires excluding food employees suffering from typhoid fever, hepatitis A virus, or specific gastrointestinal symptoms associated with diseases identified as likely to be transmitted through contamination of food. This situation describes the highest level of risk in transmitting pathogens to food, or what we would find in the first level.

Food employees who have been diagnosed with one of the agents of concern, but are not symptomatic because their symptoms have resolved, are still likely to be carrying the infected agent in their intestinal tract. This makes such employees less likely to spread the agent into food than others who are actually symptomatic, but employees diagnosed with one of the agents of concern still pose an elevated threat to public health. For this reason, there are a series of exclusions (if the employees work in facilities serving highly susceptible populations (HSP)) and restrictions (for non-HSP facilities) depending on the agent involved. This situation describes the second level of risk in transmitting pathogens to food.

Diagnosed, asymptomatic food employees who never develop symptoms are typically identified during a foodborne illness outbreak investigation through microbiological testing. If infected and asymptomatic employees are not microbiologically tested, they will remain undetected and could therefore extend the duration of a foodborne illness outbreak through continued contamination of food. The Rule provides restriction or exclusion guidelines for employees that are identified through microbiological testing with an infection from a listed foodborne pathogen, but are otherwise asymptomatic and clinically well. The exclusion or restriction guidelines are applied until the identified food employees no longer present a risk for foodborne pathogen transmission. This situation describes the third level of risk in transmitting pathogens to food.

Some food employees or conditional employees may report a possible exposure to an agent. For example, a food employee may have attended a function at which the food employee ate food that was associated with an outbreak of shigellosis, but the employee remains well. Such individuals fall into the category of having had a potential exposure and present a lower risk to public health than someone who is either symptomatic or who has a definitive diagnosis. They present a level of risk to public health that is greater than if they had not had the exposure. The approach taken in the Rule to food employees who have had a potential exposure is based on the incubation times (time between exposure and the onset of symptoms) of the various agents. The times chosen for restriction are the upper end of the average incubation periods for the specific agents. The reasoning is that this will restrict food employees only up to the time when it is unlikely they will develop symptoms. As a further protection to public health, it is recommended that such exposed food employees pay particular attention to personal hygiene and report the onset of any symptoms. This situation describes the fourth level of risk in transmitting pathogens to food.

This structured approach has linked the degree of exclusion and restriction to the degree of risk that an infected food worker will transmit an agent of concern into food. The approach strikes a balance between protecting public health and the needs of the food employee and employer.

The Rule provisions related to employee health are aimed at removing highly infectious food employees from the work place. They were developed with recognition of the characteristics of the five important pathogens, and of the risk of disease transmission associated with symptomatic and asymptomatic shedders. The provisions also account for the increased risk associated with serving food to HSP's and the need to provide extra protection to those populations. The Employee Health section was developed and revised with assistance and input from the Centers for Disease Control and Prevention (CDC) and the U.S. Equal Employment Opportunity Commission (EEOC). The exclusion and restriction criteria are based on communicable disease information, as required by the Americans with Disabilities Act of 1990, in the "The List of Infectious and Communicable Diseases Which are Transmitted through the Food Supply" published in the Federal Register on October 4, 2004, (Volume 69, Number 191) by the CDC, and from the Control of Communicable Diseases Manual, 19th Ed., David L. Heymann, MD, Editor, by the American Public Health Association, Washington D.C., 2008.

Infected Food Employees and Conditional Employees: Practical Application of Sections 120 -127

The information provided in these sections of the document are designed to assist retail food establishment managers and regulatory officials in removing infected food employees when they are at greatest risk of transmitting foodborne pathogens to food. Practical applications of this information by a retail food establishment manager may involve using these sections as a basis for obtaining information on the health status of food employees and can also be used as a basis in developing and implementing an effective Employee Health Policy. Regulatory officials can benefit by using the information provided below as a basis for determining compliance with these sections during a facility food safety inspection.

The development and effective implementation of an employee health policy based on the provisions in sections 120-127 may help to prevent foodborne illness associated with contamination of food by ill or infected food employees. The PIC and food employees should be familiar with and able to provide the following information through direct dialogue when interviewed by facility managers or regulatory officials. Compliance must be based, however, on first hand observations or information and cannot be based solely on responses from the PIC to questions regarding hypothetical situations or knowledge of the food Rule. Also, when designing and implementing an employee health policy, the following information should be considered and addressed:

1. Does the establishment have an Employee Health Policy? If so, are the food employees aware of the employee health policy, and is it available in written format and readily available for food employees? (Note: A written Employee Health Policy is not a Rule requirement but is strongly encouraged if facilities have more than two employees)
2. Does the establishment require conditional employees and food employees to report certain illnesses, conditions, symptoms, and exposures?
3. Are the reporting requirements explained to all employees?
4. What are the reporting requirements for conditional employees, food employees, and the retail food establishment manager?
5. Are conditional employees asked if they are experiencing certain symptoms or illnesses upon offer of employment? If so, which symptoms or illnesses?
6. If a food employee reports a diagnosis with one of the 5 listed pathogens in section 120, what questions are asked of the food employee? (The first question every food manager should ask a food employee who reports diagnosis with a listed pathogen is if the employee is currently having any symptoms.)
7. After reporting a diagnosis with one of the listed pathogens and after being excluded, who does the establishment PIC notify when a food employee is ready to return to work?
8. What gastrointestinal symptoms would require exclusion of a food employee from the retail food establishment?
9. What history of exposure is a conditional employee or food employee required to report?
10. If a food employee reports a gastrointestinal symptom, what criteria are used to allow the employee to return to work?

410 IAC 7-24 -120 Responsibility to require reporting by food employees or applicants

Proper management of a retail food establishment operation begins with employing healthy people and instituting a system of identifying employees who present a risk of transmitting foodborne pathogens to food or to other employees. The PIC is responsible for ensuring all food employees and conditional employees are knowledgeable and understand their responsibility to report listed symptoms, diagnosis with an illness from a listed pathogen, or exposure to a listed pathogen to the PIC. The PIC is also responsible for contacting the RA when a food employee who has reported a diagnosis with a listed pathogen is ready to resume working.

This reporting requirement is an important component of any food safety program. A food employee who suffers from any of the illnesses or medical symptoms or has a history of exposure to a listed pathogen in section 120 (a) of the Rule may transmit disease through the food being prepared. The PIC must first be aware that a food employee or conditional employee is suffering from a listed disease or symptom before steps can be taken to reduce the chance of foodborne illness.

The PIC may observe some of the symptoms that must be reported. However, food employees and conditional employees share a responsibility for preventing foodborne illness and are obligated to inform the PIC if they are suffering from any of the listed symptoms, have a history of exposure to one of the listed pathogens, or have been diagnosed with an illness caused by a listed pathogen. Food employees must comply with restrictions or exclusions imposed upon them.

A conditional employee is a potential food employee to whom a job offer has been made, conditional on responses to subsequent medical questions or examinations. A conditional employee becomes a food employee as soon as the employee begins working, even if only on a restricted basis. When a conditional employee reports a listed diagnosis or symptom, the PIC is responsible for ensuring that the conditional employee is prohibited from becoming a food employee until the criteria for reinstatement of an exclusion are met (as specified under section 122 of the Rule). When a symptomatic or diagnosed conditional employee has met the same criteria for reinstatement that apply to an excluded symptomatic or diagnosed food employee (as specified under section 122 of the Rule), the conditional employee may then begin working as a food employee.

Reporting Symptoms:

In order to protect the health of consumers and employees, information concerning the health status of conditional employees and food employees must be disclosed to the PIC. The symptoms listed in section 120 (a) of the Rule cover the common symptoms experienced by persons suffering from the pathogens identified by CDC as transmissible through food by infected food employees. A food employee suffering from any of the symptoms listed presents an increased risk of transmitting foodborne illness.

The symptoms of vomiting, diarrhea or jaundice serve as an indication that an individual may be infected with a fecal-oral route pathogen, and are likely to be excreting high levels of the infectious agent. When a food employee is shedding extremely high numbers of a pathogen through the stool or vomit, there is greater chance of transmitting the pathogen to food products.

Sore throat with fever serves as an indication that the individual may be infected with *Streptococcus pyogenes*. *Streptococcus pyogenes* causes a common infection otherwise known as “streptococcal sore throat” or “strep throat.” Streptococcal sore throat can spread from contaminated hands to food, which has been the source of explosive streptococcal sore throat outbreaks. Previous foodborne episodes with streptococcus sore throat have occurred in contaminated milk and egg products. Food products can be contaminated by infected food workers hands or from nasal discharges.

Untreated individuals in uncomplicated cases can be communicable for 10-21 days, and untreated individuals with purulent discharges may be communicable for weeks or months.

Lesions containing pus that may occur on a food employee’s hands, as opposed to such wounds on other parts of the body, represent a direct threat for introducing *Staphylococcus aureus* into food. Consequently, a double barrier is required to cover hand and wrist lesions. Pustular lesions on the arms are less of a concern when usual food preparation practices are employed and, therefore, a single barrier is allowed. However, if the food preparation practices entail contact of the exposed portion of the arm with food, a barrier equivalent to that required for the hands and wrists would be necessitated. Lesions on other parts of the body need to be covered; but an impermeable bandage is not considered necessary for food safety purposes. Food employees should be aware that hands and fingers that contact pustular lesions on other parts of the body or with the mucous membrane of the nose also pose a direct threat for introducing *Staphylococcus aureus* into food.

If a food employee has an infected cut and bandages it and puts on a glove, the employee does not have to report the infected cut to the PIC. However, if the employee does not bandage it, reporting is required.

Title I of the Americans with Disabilities Act of 1990 (ADA)

Title I of the Americans with Disabilities Act of 1990 (ADA) prohibits medical examinations and inquiries as to the existence, nature, or severity of a disability before extending a conditional offer of employment. In order for the permit

holder and the PIC to be in compliance with this particular aspect of the Rule and the ADA, a conditional job offer must be made before making inquiries about the applicant's health status.

The ADA also requires that employers provide reasonable accommodation to qualified applicants and employees with disabilities. A reasonable accommodation is a change in the application process, in the way a job is done, or to other parts of the job that enables a person with a disability to have equal employment opportunities. ADA disabilities are serious, long-term conditions. Most people with diseases resulting from the pathogens listed in the Rule do not have ADA disabilities because these diseases are usually short-term in duration. In addition, the gastrointestinal symptoms listed in section 120 (a) of the Rule usually are not long-term and severe enough, in themselves, to be ADA disabilities. Of course, these symptoms may be linked to other conditions that may be serious enough to be ADA disabilities, like Crohn's disease or cancer.

A food employer may exclude any employee under the Rule upon initially learning that the employee has *Salmonella*, or has a gastrointestinal symptom listed in the Rule. The excluded employee may then ask for an ADA reasonable accommodation instead of the exclusion. In response, the employer's first step should be to ask the employee to establish that the employee is disabled by the disease or symptom (or that the symptom is caused by another ADA disability). If the employee successfully proves that the employee has an ADA disability, then the employer may continue to exclude the employee under the Rule if:

- There is no reasonable accommodation at work that would eliminate the risk of transmitting the disease while also allowing the employee to work in a food handling position, or
- All reasonable accommodations would pose an undue hardship on the employer's business; and
- There is no vacant position not involving food handling for which the employee is qualified and to which the employee can be reassigned.

Example 1: A food employee working in the café of a department store informs the employer that the employee has been diagnosed with a disease caused by *Salmonella*. The employer immediately excludes the employee under the requirements of the Rule. The employee then establishes that the disease is an ADA disability because it is severe and long-term and the employee requests reasonable accommodation instead of an exclusion. The employer determines that no reasonable accommodation would eliminate the risk of transmitting *Salmonella* through food and refuses to remove the exclusion. However, there is a vacant clerical position in another part of the store for which the employee is qualified. Unless the employer can establish that reassigning the employee to this position would be an undue hardship, the employer's failure to make the reassignment instead of continuing the exclusion would be a violation of the ADA.¹

¹Whether or not the employee in question is an individual with an ADA disability, rule exclusions or restrictions must be removed when requirements for removal under section 122 of the Rule are met.

Example 2: A food employee has diarrhea and is excluded. The employee establishes that the diarrhea is caused by Crohn's disease. This employee also establishes a serious longstanding history of Crohn's disease and is an individual with an ADA disability. Crohn's disease is not a communicable disease and cannot be transmitted through food. No reasonable accommodation is needed to eliminate the risk of transmitting the disease through the food supply, so the Rule exclusion should be removed. Of course, the Rule's provisions on personal cleanliness for hands and arms apply as usual, requiring employees to clean hands and exposed portions of arms after using the toilet room and in other specified circumstances.

Somewhat different rules apply to conditional employees. If a conditional employee reports a disease or symptom listed in the Rule and shows that the disease or symptom makes the conditional employee an individual with an ADA disability, the employer may withdraw the job offer only if:

- The job involves food handling; and
- The employer determines that either there is no reasonable accommodation that would eliminate the risk of transmitting the disease through food, or any such accommodation would be an undue hardship to the business.
- There is no need to offer the conditional employee a vacant position not involving food handling as a reasonable accommodation.

It should be noted that the information provided here about the ADA is intended to alert employers to the existence of ADA and related CFR requirements. For a comprehensive understanding of the ADA and its implications, consult the references listed in Annex 2 of the FDA Model Food Code that relate to this section of the Rule or contact the U. S. Equal Employment Opportunity Commission. See the Equal Employment Opportunity Commission’s [How to Comply with the Americans with Disabilities Act: A Guide for Restaurants and Other Food Service Employers](http://www.eeoc.gov/facts/restaurant_guide.html), found at http://www.eeoc.gov/facts/restaurant_guide.html or http://www.eeoc.gov/facts/restaurant_guide_summary.html for detailed information about the interaction between the FDA Code and the ADA.

The information required from applicants and food employees is designed to identify employees who may be suffering from a disease that can be transmitted through food. It is the responsibility of the permit holder to convey to applicants and employees the importance of notifying the PIC of changes in their health status. Once notified, the PIC can take action to prevent the likelihood of the transmission of foodborne illness. Applicants, to whom a conditional offer of employment is extended, and food employees are required to report their specific history of exposure, medical symptoms, and previous illnesses. The symptoms listed may be indicative of a disease that is transmitted through the food supply by infected food employees.

As required by the ADA, the CDC published in the Federal Register on October 4, 2004, (Volume 69, Number 191) a list of infectious and communicable diseases that are transmitted through food. The CDC updates the list annually. See [List of Infectious and Communicable Diseases which are Transmitted through the Food Supply](http://edocket.access.gpo.gov/2004/pdf/04-22260.pdf) at <http://edocket.access.gpo.gov/2004/pdf/04-22260.pdf>. The list is divided into two parts: pathogens often transmitted and pathogens occasionally transmitted by infected persons who handle food.

The following lists summarize the CDC list by comparing the common symptoms of each pathogen. Symptoms may include diarrhea, fever, vomiting, jaundice, and sore throat with fever. The CDC has no evidence that the HIV virus is transmissible via food. Therefore, a food employee positive for the HIV virus is not of concern unless suffering secondary illness listed below. The following lists include all enterohemorrhagic or Shiga toxin-producing *E. coli* likely to occur in foods in the United States.

Pathogens Often Transmitted by Food Contaminated by Infected Persons Who Handle Food, and Modes of Transmission of Such Pathogens

	D	F	V	J	S
1. Noroviruses	D	F	V	J	S
2. Hepatitis A virus	D	F	V	-	-
3. <i>Salmonella</i> Typhi	D	F	V	J	-
4. <i>Shigella</i> species	-	F	V	-	-
5. <i>Staphylococcus aureus</i>	D	-	V	-	-
6. <i>Streptococcus pyogenes</i>	-	F	-	-	S

Pathogens Occasionally Transmitted by Food Contaminated by Infected Persons Who Handle Food, But Usually Transmitted by Contamination at the Source or in Food Processing or by Non-foodborne Routes.

	D	F	V	J	S
1. <i>Campylobacter jejuni</i>	D	F	V	-	-
2. <i>Cryptosporidium parvum</i>	D	F	V	-	-
3. <i>Entamoeba histolytica</i>	D	F	-	-	-
4. Enterohemorrhagic <i>Escherichia coli</i>	D	-	-	-	-
5. Enterotoxigenic <i>Escherichia coli</i>	D	F	V	-	-
6. <i>Giardia lamblia</i>	D	F	V	-	-
7. <i>Salmonella</i>	D	F	V	-	-
8. <i>Taenia solium</i>	-	-	-	-	-
9. <i>Vibrio cholerae</i> 01	D	-	V	-	-
10. <i>Yersinia enterocolitica</i>	D	F	V	-	-

KEY: **D** = Diarrhea **V** = Vomiting **S** = Sore throat with fever **F** = Fever **J** = Jaundice

The 5 Listed Pathogens:

The CDC has designated the 5 organisms listed in the Rule as having high infectivity via contamination of food by infected food employees. This designation is based on the number of confirmed cases reported that involved food employees infected with one of these organisms and/or the severity of the medical consequences to those who become ill. The following is taken from information provided in the 19th Edition of Control of Communicable Diseases Manual, the CDC website, and the FDA Bad Bug Book, and is provided as background information on pathogen virulence, infectivity, and common symptoms exhibited with infection of each of the 5 listed pathogens.

NOROVIRUS

Disease Etiology: Noroviruses (genus *Norovirus*, family Caliciviridae) are a group of small (27-40nm), round structured, single-stranded RNA, nonenveloped viruses that cause acute gastroenteritis in humans. Norovirus has also been commonly known as “Norwalk-like virus,” “Small Round-structured Virus,” and “Winter Vomiting Disease.”

The CDC estimates that norovirus is the leading cause of foodborne illness in the United States. Transmission of norovirus has been shown to occur most commonly through the fecal-oral route, with contaminated food identified as a common vehicle of transmission. Exclusion of food employees exhibiting or reporting diarrhea symptoms is an essential intervention in controlling the transmission of norovirus from infected food employees’ hands to RTE food items. Norovirus also has a high secondary attack rate (> 50%) via person-to-person contact.

Norovirus has also been reported to cause infection by airborne transmission when individuals are in close physical proximity to an infected individual vomiting in the facility. Therefore an infected individual vomiting in a food facility increases the risk of infecting employees and consumers. Foodborne illness outbreaks have occurred from consumers vomiting in the dining room, or employees vomiting on the premises. Removing food employees exhibiting or reporting vomiting symptoms from the food facility protects consumers and fellow workers from infection with norovirus. Incubation Period: Generally between 24 and 48 hours (median in outbreaks 33 to 36 hours), but cases can occur within 12 hours of exposure.

Symptoms and Complications: Acute-onset explosive (or projectile) vomiting, watery non-bloody diarrhea with abdominal cramps, nausea, headache, and rarely, a low grade fever. Symptoms usually last 24 to 48 hours. Vomiting is more common in children. Recovery is usually complete and there is no evidence of any serious long-term sequelae. Among the young and the elderly, dehydration is a common complication.

There is no long-term immunity to norovirus and individuals may be repeatedly infected throughout their lifetimes. There is no specific therapy for viral gastroenteritis. Symptomatic therapy consists of replacement of fluid loss by the administration of liquids orally, and in rare instances, through parenteral intravenous fluid therapy. Earlier feeding studies conducted on norovirus have found that as many as 30% of individuals infected with norovirus are asymptomatic.

Infectivity: Noroviruses are highly contagious, and it is thought that an inoculum of as few as 10 viral particles may be sufficient to infect an individual. Although pre-symptomatic shedding may occur, shedding usually begins with onset of symptoms and may continue for 2 weeks after recovery. However the degree of infectivity of prolonged shedding has not been determined. Norovirus is shed at high levels in the stool: 10⁵ – 10⁷/g or more.

SALMONELLA SPP.

Disease Etiology: Penetration and passage of *Salmonella* organisms from gut lumen into epithelium of small intestine where inflammation occurs; there is evidence that an enterotoxin may be produced, perhaps within the enterocyte. There are over 2500 different species identified of this organism with most causing milder illnesses in humans than the typhoid strain.

Incubation period: Depends on inoculum size and on host factors: Onset time -- 6-72 hours, usually 12-36 hours.

Symptoms—Nausea, vomiting, abdominal cramps, diarrhea, and fever. Chronic consequences are rare—arthritic

symptoms may follow 3-4 weeks after onset of acute symptoms. Acute symptoms may last for 4-7 days or may be prolonged, again depending on host factors, ingested dose, and strain characteristics.

Infective dose -- As few as 15-20 cells; depends upon age and health of host, and strain differences among the members of the genus. Humans can carry the organism for many weeks without any symptoms with the ability to pass it to another person through the fecal-oral route, such as by handling clean utensils and food.

SALMONELLA TYPHI

Disease Etiology: *Salmonella enterica* serovar Typhi (commonly *S. Typhi*) causes a systemic bacterial disease, with humans as the only host. This disease is relatively rare in the United States, with fewer than 500 sporadic cases occurring annually in the U.S. Worldwide, the annual estimated incidence of Typhoid fever is about 17 million cases with approximately 600,000 deaths. Currently, most cases of *S. Typhi* in industrialized nations are imported into the country from developing countries. Antibiotic-resistant strains have become prevalent in several areas of the world.

Incubation period: Depends on inoculum size and on host factors: from 3 days to over 60 days, with a usual range of 8 – 14 days.

Symptoms: Insidious onset of sustained fever, marked headache, malaise, anorexia, relative bradycardia, splenomegaly, and nonproductive cough in the early stage of the illness, rose spots on the trunk in 25% of white skinned patients and constipation more often than diarrhea in adults. The illness varies from mild illness with low-grade fever to severe clinical disease with abdominal discomfort and multiple complications.

Infectivity: The minimal infectious dose is estimated to be less than 1000 bacterial cells. An individual infected with *S. Typhi* is infectious as long as the bacilli appear in the excreta, usually from the first week throughout the convalescence; variable thereafter. About 10% of untreated typhoid fever patients will discharge bacilli for 3 months after onset of symptoms, and 2%-5% become permanent carriers; fewer persons affected with paratyphoid organisms may become permanent gallbladder carriers.

ENTEROHEMORRHAGIC OR SHIGA TOXIN-PRODUCING ESCHERICHIA COLI

Disease Etiology: *E. coli* O157:H7 is the most commonly identified strain of enterohemorrhagic *Escherichia coli* (EHEC) or Shiga toxin-producing *Escherichia coli* (STEC) as a cause of foodborne illness in the United States. *E. coli* O157:H7 is a zoonotic disease derived from cattle and other ruminants. However, *E. coli* O157:H7 also readily transmits from person-to-person, so contaminated raw ingredients and ill food employees both can be sources of foodborne disease. Other EHEC or STEC serotypes have been identified as a source of foodborne illness in the United States, however not as frequently as *E. coli* O157:H7. The other serogroups most commonly implicated as a cause of foodborne illness in the United States are O26, O111, O103, O45, and O121.

The Rule definition of STEC (section 89) covers all *E. coli* identified in clinical laboratories that produce Shiga toxins. Nearly 200 O: H combinations of *E. coli* have been shown to produce Shiga toxins. The Rule definition includes all STEC, including those that have not been specifically implicated in human disease, such as hemorrhagic colitis (i.e., bloody diarrhea) or hemolytic uremic syndrome (HUS). A subset of STEC that has the capacity to both produce Shiga toxin and cause “attaching and effacing” lesions in the intestine is classified as “enterohemorrhagic” (EHEC). EHEC *E. coli* cause hemorrhagic colitis, meaning bleeding enterically or bleeding from the intestine. Infections with EHEC may be asymptomatic, but are classically associated with bloody diarrhea (hemorrhagic colitis) and hemolytic uremic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP). Virtually all human isolates of *E. coli* O157:H7 serotypes are EHEC.

Incubation period: From 2-10 days, with a median of 3-4 days.

Symptoms: The illness is characterized by severe cramping (abdominal pain) and diarrhea with a range from mild and non-bloody to stools that are virtually all blood. Occasionally, vomiting occurs. Some individuals exhibit watery diarrhea only. Lack of fever in most patients can help to differentiate this infection from other enteric pathogens.

About 8% of individuals with *E. coli* O157:H7 diarrhea progress to HUS. This rate varies for other serotypes of Enterohemorrhagic *E. coli*.

Infectivity: The infectious dose for *E. coli* O157:H7 can be as low as 10 bacterial cells. Children under 5 years old are most frequently diagnosed with infection and are at greatest risk of developing HUS. The elderly also experience a greater risk of complications. The duration of excretion of Enterohemorrhagic *E. coli* in the stool is typically 1 week or less in adults, but can be up to 3 weeks in one-third of infected children.

SHIGELLA SPP.

Disease Etiology: Causes an acute bacterial disease, known as shigellosis, and primarily occurs in humans, but also occurs in other primates, such as monkeys and chimpanzees. An estimated 300,000 cases of shigellosis occur annually in the U.S. *Shigella* spp. consist of 4 species or serogroups, including *S. flexneri*, *S. boydii*, *S. sonnei*, and *S. dysenteriae*; which all differ in geographical distribution and pathogenicity. *Shigella* spp. are highly infectious and highly virulent. Outbreaks occur in overcrowding conditions, where personal hygiene is poor, including in institutions, such as prisons, mental hospitals, day care centers, and refugee camps, and also among men who have sex with men. Water and RTE foods contaminated by feces, frequently from food workers' hands, are common causes of disease transmission. Multidrug-resistant *Shigella* (including *S. dysenteriae* 1) have appeared worldwide. Concern over increasing antimicrobial resistance has led to reduced use of antimicrobial therapy in treating shigellosis.

Incubation period: Usually 1 – 3 days, but ranges from 12 to 96 hours, and up to 1 week for *S. dysenteriae* 1.

Symptoms and Complications: Abdominal pain, diarrhea, fever, nausea, and sometimes vomiting, tenesmus, toxemia, and cramps. The stools typically contain blood, pus, or mucus resulting from mucosal ulcerations. The illness is usually self-limited, with an average duration of 4-7 days. Infections are also associated with rectal bleeding, drastic dehydration, and convulsions in young children. The fatality rate for *Shigella dysenteriae* 1 may be as high as 20% among hospitalized cases. Other complications can also occur, such as Reiter's disease, reactive arthritis, intestinal perforation, and hemolytic uremic syndrome (HUS).

Infectivity: The infectious dose for humans is low, with as few as 10 bacterial cells depending on age and condition of the host. Infectivity occurs during acute infection and until the infectious agent is no longer present in feces, usually within 4 weeks after illness. Asymptomatic carriers may transmit infection; rarely, the carrier state may persist for months or longer.

HEPATITIS A VIRUS

Disease Etiology: Hepatitis A virus (HAV) is a 27-nanometer picornavirus (positive strand RNA, non-enveloped virus). The hepatitis A virus has been classified as a member of the family Picornaviridae. The exact pathogenesis of HAV infection is not understood, but the virus appears to invade from the intestinal tract and is subsequently transported to the liver. The hepatocytes are the site of viral replication and the virus is thought to be shed via the bile.

HAV is most commonly spread by the fecal-oral route through person-to-person contact. Risk factors for reported cases of hepatitis A include personal or sexual contact with another case, illegal drug use, homosexual male sex contact, and travel to an endemic country. Common source outbreaks also can occur through ingestion of water or food that has fecal contamination. However, the source of infection is not identified for approximately 50% of reported cases.

HAV infection is endemic in developing countries, and less common in industrialized countries with good environmental sanitation and hygienic practices. In the developing world, nearly all HAV infections occur in childhood and are asymptomatic or cause a mild illness. As a result, hepatitis A (symptomatic infection with jaundice) is rarely seen in the developing world. More than 90% of adults born in many developing countries are seropositive.

Children play an important role in the transmission of HAV and serve as a source of infection for others, because most children have asymptomatic infections or mild, unrecognized HAV infections. In the United States, the disease is most common among school-aged children and young adults. After correction for under-reporting and undiagnosed

infections, an estimated 61,000 HAV infections (includes cases of hepatitis A as well as asymptomatic infections) occurred in 2003.

HAV Immunization: Immune globulin (IG) can be used to provide passive pre-exposure immunoprophylaxis against hepatitis A. Protection is immediately conferred to an exposed individual following administration of IG, and immunity is provided for 3-5 months following inoculation. IG is effective in preventing HAV infection when given as post-exposure immunoprophylaxis, if given within 14 days of exposure. When a food service worker with hepatitis A is identified, IG is often given to co-workers. Active immunoprophylaxis using hepatitis A vaccine (a formalin-inactivated, attenuated strain of HAV) has been shown to provide immunity in > 95% of those immunized, with minimal adverse reactions. Hepatitis A vaccination of food workers has been advocated, but has not been shown to be cost-effective and generally is not recommended in the United States, although it may be appropriate in some communities.

Incubation period: Average 28 – 30 days (range 15 – 50 days).

Symptoms and Complications: Illness usually begins with symptoms, such as nausea/vomiting, diarrhea, abdominal pain, fever, and/or fatigue. Jaundice, dark urine or light colored stools might be present at onset, or follow illness symptoms within a few days. HAV infection of older children and adults is more likely to cause clinical illness with jaundice (i.e., hepatitis A); onset of illness is usually abrupt. In young adults, 76-97% have symptoms and 40-70% are jaundiced. Jaundice generally occurs 5-7 days after the onset of gastrointestinal symptoms. For asymptomatic infections, evidence of hepatitis may be detectable only through laboratory tests of liver infections, such as alanine aminotransferase (ALT) tests. The disease varies in severity from a mild illness to a fulminant hepatitis, ranging from 1-2 weeks to several months in duration. Up to 10-15% of the reported cases, have prolonged, relapsing hepatitis for up to 6 months. The degree of severity often increases with age; however, most cases result in complete recovery, without sequelae or recurrence. The reported case fatality rate is 0.1% - 0.3% and can reach 1.8% for adults over 50 years old.

Diagnosis: Diagnosis of HAV infection requires specific serological testing for IgM anti-HAV. IgM anti-HAV becomes undetectable within 6 months of illness onset for most persons; however, some persons can remain IgM anti-HAV positive for years after acute infection. Total anti-HAV (the only other licensed serologic test) can be detected during acute infection but remains positive after recovery and for the remainder of the person's life.

Infectivity: Evidence indicates maximum infectivity during the latter half of the incubation period, continuing for a few days after onset of jaundice. Most cases are probably noninfectious after the first week of jaundice. Chronic shedding of HAV in feces has not been reported. HAV is shed at peak levels in the feces, one to two weeks before onset of symptoms, and shedding diminishes rapidly after liver dysfunction or symptoms appear. Liver dysfunction or symptoms occur at the same time circulating antibodies to HAV first appear. Immunity after infection probably lasts for life; immunity after vaccination is estimated to last for at least 20 years.

Reporting History of Exposure:

The reporting requirements for history of exposure are designed to identify employees who may be incubating an infection due to Norovirus, *Shigella spp.*, *E. coli* O157:H7 or other EHEC/STEC, typhoid fever, or HAV.

Which employees who report exposure are restricted?

- Employees who work in a retail food establishment serving a highly susceptible population facility.

What constitutes exposure?

- Consuming a food that caused illness in another consumer due to infection with norovirus, *Shigella spp.*, *E. coli* O157:H7 or other EHEC/STEC, typhoid fever, or HAV.
- Attending an event or working in a setting where there is a known disease outbreak.
- Close contact with a household member who is ill and is diagnosed with a listed pathogen.

Why are other guidelines provided, in addition to restriction for employees serving a HSP who report exposure to hepatitis A virus?

- Employees who have had a hepatitis A illness in the past are most likely protected from infection by life-time immunity to hepatitis A infection.
- Immunity developed through immunization or IgG inoculation prevents hepatitis A infection in exposed employees.
- Our standard definition of HSP doesn't apply very well to HAV. Children under 6 years old who become infected with HAV are generally asymptomatic, and while a higher proportion of susceptible elderly who become infected have serious illness, most institutionalized elderly are protected from HAV by prior infection.

What is the period of restriction?

- The period of restriction begins with the most recent time of foodborne or household member exposure and lasts for the usual incubation period of the pathogen as defined in the Control of Communicable Diseases Manual. This is the time that the employee is most likely to begin shedding the pathogen.
 - For norovirus, 48 hours after the most recent exposure
 - For *Shigella* spp., 3 days after the most recent exposure
 - For *E. coli* O157:H7 or other EHEC/STEC, 3 days after the most recent exposure
 - For typhoid fever (*S. Typhi*), 14 days after the most recent exposure
 - For HAV, 30 days after the most recent exposure
 - For Salmonellosis, 12-36 hours up to 4 – 7 days after the recent exposure

What is the period of restriction when exposed to a diagnosed, ill household member?

- While the household member is symptomatic with an infection due to Norovirus, *Shigella* spp., *E coli* O157:H7 or other EHEC/STEC, typhoid fever (*S. Typhi*), salmonellosis, or HAV;
- Plus during the usual incubation period of the pathogen of concern:
 - For norovirus, symptomatic period plus 48 hours
 - For *Shigella* spp., symptomatic period plus 3 days
 - For *E. coli* O157:H7 or other EHEC/STEC, symptomatic period plus 3 days
 - For typhoid fever (*S. Typhi*), symptomatic period plus 14 days
 - For HAV, onset of jaundice plus 30 days
 - For Salmonellosis, symptomatic period plus 7 days

What is the appropriate response to a report of exposure to other food employees?

- Employees who report a history of exposure but who do not work in a HSP facility should be reminded of the requirements for reporting illness, avoidance of bare hand contact with RTE foods, and proper hand washing and personal hygiene.

410 IAC 7-24 – 121 Exclusions and Restrictions²

Refer to the above section 120 entitled “**Responsibility to require reporting by food employees or applicants**” for actions to take with conditional employees.

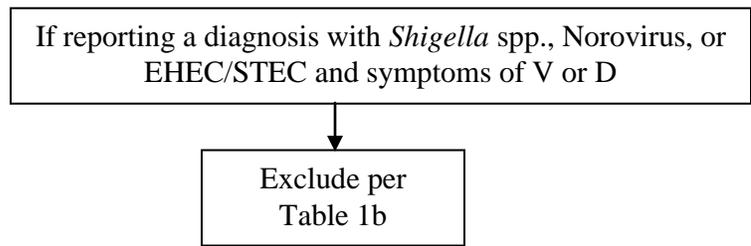
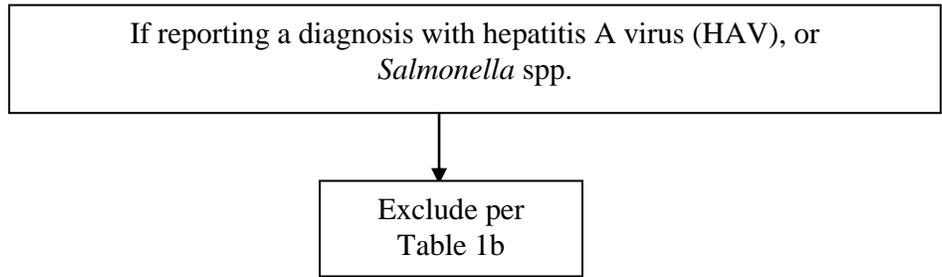
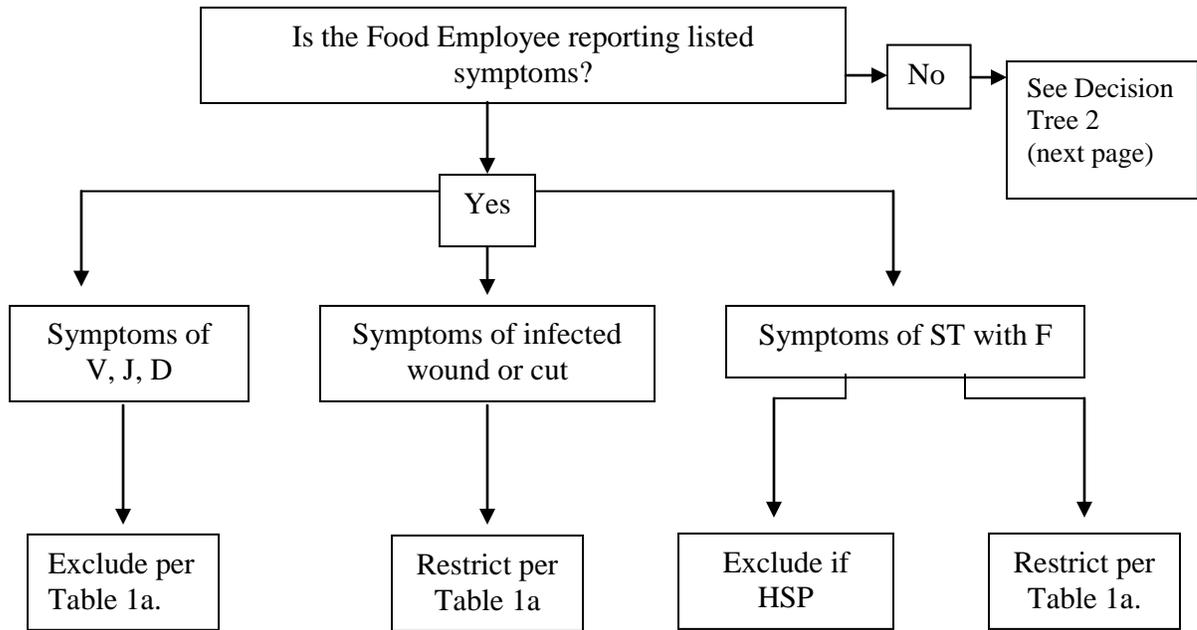
It is necessary to exclude food employees symptomatic with diarrhea, vomiting, or jaundice, or suffering from a disease likely to be transmitted through contamination of food, because of the increased risk that the food being prepared will be contaminated, such as with a pathogenic microorganism. However, if the food employee is suffering from vomiting or diarrhea symptoms, and the condition is from a non-infectious condition, Crohn's disease or an illness during early stages of a pregnancy, the risk of transmitting a pathogenic microorganism is minimal. In this case, the food employee may remain working in a full capacity if they can substantiate that the symptom is from a noninfectious condition. The food employee can substantiate this through providing to the PIC medical documentation or other documentation proving that the symptom is from a noninfectious condition.

Because of the high infectivity (ability to invade and multiply) and/ or virulence (ability to produce severe disease), of typhoid fever (*Salmonella*) and hepatitis A virus, a food employee diagnosed with an active case of illness caused by either of these two pathogens, whether asymptomatic or symptomatic, must be excluded from retail food establishments. The exclusion is based on the high infectivity, and/or the severe medical consequences to individuals infected with these organisms. A food employee diagnosed with an active case of illness caused by norovirus, *Shigella* spp., or *E. coli* O157:H7 or other EHEC/STEC, is excluded if exhibiting symptoms of vomiting and diarrhea and then allowed to work as the level of risk of pathogen transmission decreases.

The degree of risk for a food employee or conditional employee who is diagnosed with an infection but asymptomatic with regard to symptoms, to transmit a foodborne pathogen decreases with the resolution of symptoms. This risk decreases even further for those employees that are diagnosed with a listed pathogen, but never developed symptoms. The decrease in risk is taken under consideration when excluding and restricting diagnosed food employees and results in a slight difference in the way food employees diagnosed with Norovirus, but asymptomatic with respect to gastrointestinal symptoms are handled.

²In order to comply with Title I of the Americans with Disabilities Act, exclusion must also be removed if the employee is entitled to a reasonable accommodation that would eliminate the risk of transmitting the disease. Reasonable accommodation may include reassignment to another position in which the individual would not work around food. The steps an employer must take when an excluded employee requests reasonable accommodations are briefly described above in section 120 of this document. However, it is not possible to explain all relevant aspects of the ADA within this Annex. When faced with an apparent conflict between ADA and the Rule's exclusion and restriction requirements, employers should contact the U.S. Equal Employment Opportunity Commission.

Section 121 Decision Tree 1. When to Exclude or Restrict a Food Employee Who Reports a Symptom and When to Exclude a Food Employee Who Reports a Diagnosis with Symptoms Under the Rule



Abbreviations Key:

(V) Vomiting

(J) Jaundice

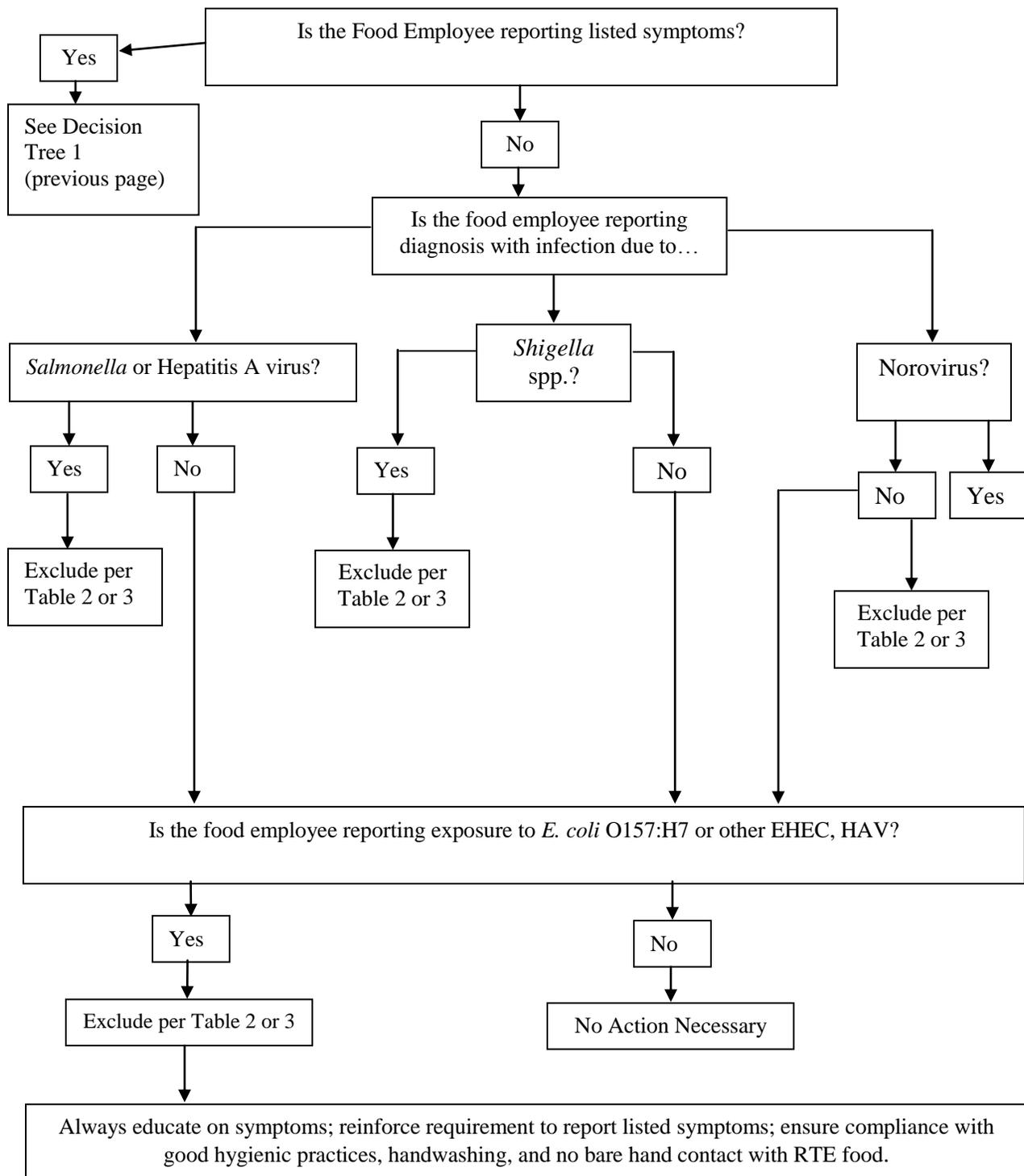
(D) Diarrhea

(ST with F) Sore Throat with Fever

(EHEC/STEC) Enterohemorrhagic, or Shiga toxin-producing *Escherichia coli*

(HSP) Highly Susceptible Population

Section 121 Decision Tree 2. When to Exclude or Restrict a Food Employee Who is Asymptomatic and Reports a Listed Diagnosis and When to Restrict a Food Employee Who Reports a Listed Exposure Under the Rule



Section 121 Table 1a: Summary of Requirements for Symptomatic Food Employees

Food employees and conditional employees shall report symptoms immediately to the PIC			
SYMPTOMS	EXCLUSION OR RESTRICTION	PIC REMOVING SYMPTOMATIC FOOD EMPLOYEES FROM EXCLUSION/RESTRICTION	RA APPROVAL NEEDED TO RETURN TO WORK?
<p>Vomiting</p> <p>Diarrhea</p> <p>Fever</p>	<p>EXCLUDE Section 121</p>	<p>When the excluded food employee has been asymptomatic for at least 24 hours or provides medical documentation. Section 122(a)(1)</p> <p>Exceptions: If diagnosed with Norovirus, <i>Shigella</i> spp., <i>E. coli</i> O157:H7 or other EHEC, HAV, or <i>Salmonella</i> spp.</p>	<p>No, if not diagnosed</p>
<p>Jaundice</p>	<p>EXCLUDE Section 121</p>	<p>The PIC may remove an exclusion specified under Section 121(a)(5) of this rule if:</p> <ul style="list-style-type: none"> • No diagnosis of infectious agent, and • at least seven (7) days have passed since the onset of jaundice; or • at least fourteen (14) days have passed since the onset of symptoms if no jaundice occurred. 	<p>No</p>
<p>Sore Throat with Fever</p>	<p>RESTRICT Section 121</p>	<p>When restricted food employee is asymptomatic or; if suspected of causing an outbreak, is asymptomatic and provides medical documentation. Section 122(c)</p>	<p>No</p>
<p>Infected wound or pustular boil</p>	<p>RESTRICT Section 121</p>	<p>When the infected wound or boil is properly covered or; if suspected of causing an outbreak, is asymptomatic and provides medical documentation. Section 122(c)</p>	<p>No</p>

Key for Tables 1(a & b), 2, 3, and 4:

PIC = Person-in-Charge

RA = Regulatory Authority

EHEC/STEC = Enterohemorrhagic, or Shiga toxin-producing *Escherichia coli*

HAV = Hepatitis A virus

HSP = Highly Susceptible Population

Section 121 Table 1b: Summary of Requirements for Diagnosed, Symptomatic Food Employees

Food employees & conditional employees shall report a listed diagnosis with symptoms immediately to the PIC			
PATHOGEN DIAGNOSIS	EXCLUSION OR RESTRICTION	PIC REMOVING SYMPTOMATIC FOOD EMPLOYEES FROM EXCLUSION/RESTRICTION	RA APPROVAL NEEDED TO RETURN TO WORK?
Hepatitis A Virus (HAV)	EXCLUDE Section 121	When approval is obtained from the RA, which has been based on the conditions in Section 127, and: <ul style="list-style-type: none"> • The food employee has been jaundiced for more than 7 calendar days, or • The anicteric food employee has had symptoms or more than 14 days, or • The food employee provides medical documentation 	Yes
<i>Salmonella</i> spp.	EXCLUDE Section 121	When approval is obtained from the RA, which has been based on the conditions in Section 127 and: Food employee provides medical documentation, that states the food employee is free of a <i>Salmonella</i> infection	Yes
<i>E. coli</i> O157:H7 or other EHEC/ STEC	EXCLUDE Section 121	Serving HSP/Non-HSP facility: Remains excluded until meeting the requirements listed below: <ul style="list-style-type: none"> • Approval is obtained from RA, which has been based on the conditions in Section 127, and • Medically cleared. 	Yes
Norovirus	EXCLUDE Section 121	Serving HSP/Non-HSP facility: Remains excluded until meeting the requirements listed below: <ul style="list-style-type: none"> • Approval is obtained from RA, which has been based on the conditions in Section 127, and • Medically cleared. 	Yes
<i>Shigella</i> spp.	EXCLUDE Section 121	Serving HSP/Non-HSP facility: Remains excluded until meeting the requirements listed below: <ul style="list-style-type: none"> • Approval is obtained from RA, which has been based on the conditions in Section 127, and • Medically cleared. 	Yes

Section 121 Table 2: Summary of Requirements for Diagnosed Food Employees with Resolved Symptoms

Food employees & conditional employees shall report a listed diagnosis immediately to the PIC			
PATHOGEN DIAGNOSIS	EXCLUSION OR RESTRICTION	PIC REMOVING SYMPTOMATIC FOOD EMPLOYEES FROM EXCLUSION/RESTRICTION	RA APPROVAL NEEDED TO RETURN TO WORK?
Hepatitis A Virus (HAV)	EXCLUDE Section 121	When approval is obtained from the RA, which has been based on the conditions in Section 127, and: <ul style="list-style-type: none"> The food employee has been jaundiced for more than 7 calendar days, or The anicteric food employee has had symptoms or more than 14 days, or The food employee provides medical documentation 	Yes
<i>Salmonella</i> spp. Including past illness from <i>Salmonella typhi</i>	EXCLUDE Section 121	When approval is obtained from the RA, which has been based on the conditions in Section 127 and: Food employee provides medical documentation, that states the food employee is free of a <i>Salmonella</i> infection	Yes
<i>E. coli</i> O157:H7 or other EHEC/ STEC	EXCLUDE Section 121	Serving HSP/Non-HSP facility: Remains excluded until meeting the requirements listed below: <ul style="list-style-type: none"> Approval is obtained from RA, which has been based on the conditions in Section 127, and Medically cleared. 	Yes
Norovirus	EXCLUDE Section 121	Serving HSP/Non-HSP facility: Remains excluded until meeting the requirements listed below: <ul style="list-style-type: none"> Approval is obtained from RA, which has been based on the conditions in Section 127, and Medically cleared. 	Yes
<i>Shigella</i> spp.	EXCLUDE Section 121	Serving HSP/Non-HSP facility: Remains excluded until meeting the requirements listed below: <ul style="list-style-type: none"> Approval is obtained from RA, which has been based on the conditions in Section 127, and Medically cleared. 	Yes

Section 121 Table 3: Summary of Requirements for Diagnosed Food Employees Who Never Develop Gastrointestinal Symptoms

Food employees & conditional employees shall report a listed diagnosis (& who have no symptoms) immediately to the PIC			
The PIC shall prohibit a conditional employee that reports a listed diagnosis from becoming a food employee until meeting the criteria listed in Sections 122 and 127 of the Rule, for reinstatement of a diagnosed food employee			
PATHOGEN DIAGNOSIS	EXCLUSION OR RESTRICTION	PIC REMOVING DIAGNOSED FOOD EMPLOYEES WHO NEVER DEVELOP GASTROINTESTINAL SYMPTOMS FROM EXCLUSION/RESTRICTION	RA APPROVAL NEEDED TO RETURN TO WORK?
<i>Salmonella</i> including previous illness with <i>S. Typhi</i>	EXCLUDE Section 121	When approval is obtained from the RA under Sections 122 and 127: Food employee provides medical documentation, specifying that the food employee is free of a <i>S. Typhi</i> infection.	Yes
<i>Shigella</i> spp.	EXCLUDE Section 121	Remains excluded or restricted until approval is obtained from the RA, and: • Medically cleared, or • More than 7 calendar days have passed since the food employee was last diagnosed.	Yes
Norovirus	EXCLUDE Section 121	Remains excluded or restricted until approval is obtained from the RA under Sections 122 and 127; and • Medically cleared, or • More than 48 hours have passed since the food employee was diagnosed.	Yes
Shiga toxin producing <i>E. coli</i> or other EHEC/STEC	EXCLUDE Section 121	Remains excluded or restricted until approval is obtained from the RA, and: • Medically cleared, or • More than 7 calendar days have passed since the food employee was diagnosed.	Yes
Hepatitis A virus	EXCLUDE Section 121	When approval is obtained from the RA, and • The anicteric food employee has had symptoms for more than 14 days, or • The food employee provides medical documentation.	Yes

Section 121 Table 4: Recommendations for History of Exposure, and Absent Symptoms or Diagnosis

Food employees and conditional employees shall report a listed exposure to the PIC			
The PIC should reinforce good hygienic practices, symptom reporting requirements, proper handwashing and no bare-hand contact with RTE foods for all food employees that report a listed exposure			
PATHOGEN EXPOSURE (High-risk condition)	HSP FACILITY EXCLUSION ?	REMOVAL OF EXCLUSION OF FOOD EMPLOYEE/CONDITIONAL EMPLOYEE	RA APPROVAL NEEDED TO RETURN TO WORK?
<i>Salmonella</i> spp.	YES	Exclude when symptoms of D, F, V, J, or ST w/ F occurring. No exclusion when 14 calendar days have passed since the last exposure, or more than 14 days has passed since the food employee's household contact became asymptomatic.	No, unless diagnosed
<i>Shigella</i> spp.	YES	Exclude when symptoms of D, F, V, J, or ST w/ F occurring. No exclusion when more than 3 calendar days have passed since the last exposure, or more than 3 days have passed since the food employee's household contact became asymptomatic.	No, unless diagnosed
Norovirus	YES	Exclude when symptoms of D, F, V, J, or ST w/ F occurring. No exclusion when more than 48 hours have passed since the last exposure, or more than 48 hours has passed since the food employee's household contact became asymptomatic.	No, unless diagnosed
<i>E. coli</i> O157:H7 or other EHEC/ STEC	YES	Exclude when symptoms of D, F, V, J, or ST w/ F occurring. No exclusion when more than 3 calendar days have passed since the last exposure, or more than 3 calendar days has passed since the food employee's household contact became asymptomatic.	No, unless diagnosed
HAV	YES	Exclude when symptoms of D, F, V, J, or ST w/ F occurring. No exclusion when any of the following conditions are met: <ul style="list-style-type: none"> • At least 7 days have passed since the onset of jaundice • At least 14 days have passed since the onset of symptoms, if no jaundice occurred; or • At least 2 blood tests show falling liver enzymes 	No, unless diagnosed

Key for Table 4: GHP = Good Hygienic Practices; RTE = Ready-to-Eat foods; BHC = Bare Hand Contact

410 IAC 7-24 – 121 Exclusions and Restrictions (continued)³

Restrictions and exclusions vary according to the population served because highly susceptible populations have increased vulnerability to foodborne illness. For example, foodborne illness in a healthy individual may be manifested by mild flu-like symptoms. The same foodborne illness may have serious medical consequences in immunocompromised individuals. This point is reinforced by statistics pertaining to deaths associated with this, the latest as a sign the foodborne illness caused by *Salmonella enteritidis*. Over 70% of the deaths in outbreaks attributed to this organism occurred among individuals who for one reason or another were immunocompromised. This is why the restrictions and exclusions listed in the rule are especially stringent for food employees serving highly susceptible populations.

Periodic testing of food employees for the presence of diseases transmissible through food is not cost effective or reliable. Therefore, restriction and exclusion provisions are triggered by the active gastrointestinal symptoms, followed by diagnosis and history of exposure.

The history of exposure that must be reported applies only to the 5 organisms listed.

Upon being notified of the history of exposure, the PIC should immediately:

1. Discuss the traditional modes of transmission of fecal-oral route pathogens.
2. Advise the food employee to observe good hygienic practices both at home and at work. This includes a discussion of proper handwashing, as described in the Rule, after going to the bathroom, changing diapers, or handling stool-soiled material.
3. Review the symptoms listed in the Rule that require immediate exclusion from the retail food establishment.
4. Remind food employees of their responsibility as specified in the Rule to inform the PIC immediately upon the onset of any of the symptoms listed in the Rule.
5. Ensure that the food employee stops work immediately if any of the symptoms described in the Rule develop and reports to the PIC.

A restricted food employee may work in an area of the retail food establishment that houses packaged food, wrapped single-service or single-use articles, or soiled food equipment or utensils. Examples of activities that a restricted person might do include working at the cash register, seating patrons, bussing tables, stocking canned or other packaged foods, or working in a non-food cleaning or maintenance capacity consistent with the criteria in the definition of the term “restricted.” A food employee who is restricted from working in one retail food establishment may not work in an unrestricted capacity in another retail food establishment, but could work unrestricted in a retail store that is not a retail food establishment. A restricted food employee may enter a retail food establishment as a consumer.

An excluded individual may not work as a food employee on the premises of any retail food establishment.

³ In order to comply with Title I of the Americans with Disabilities Act, an exclusion must also be removed if the employee is entitled to a reasonable accommodation that would eliminate the risk of transmitting the disease. Reasonable accommodation may include reassignment to another position in which the individual would not work around food. The steps an employer must take when an excluded employee requests reasonable accommodations are briefly described above in section 120 of this document. However, it is not possible to explain all relevant aspects of the ADA within this Annex. When faced with an apparent conflict between the ADA and the Rule’s exclusion and restriction requirements, employers should contact the U.S. Equal Employment Opportunity Commission.

410 IAC 7-24 – 122 through 127 Removal of Exclusions and Restrictions

Food employees diagnosed with norovirus, hepatitis A virus, *Shigella* spp., *E. coli* O157:H7 or other EHEC, and symptomatic with diarrhea, vomiting, or jaundice, are excluded under section 121 (a)(1) or section 121(a)(2). However symptomatic, diagnosed food employees differ from symptomatic, undiagnosed food employees in the requirements that must be met before returning to work in a full capacity after symptoms resolve.

The PIC may allow undiagnosed food employees who are initially symptomatic and whose symptoms have resolved to return to work in a full capacity 24 hours after symptoms resolve.

However, diagnosis with a listed pathogen invokes additional requirements before the PIC may allow diagnosed food employees to return to work in full capacity.

Asymptomatic food employees diagnosed with norovirus, *Shigella* spp., *E. coli* O157:H7 or other EHEC may not return to work in a full capacity 24 hours after symptoms resolve. The PIC may only allow these food employees to work on a restricted basis 24 hours after symptoms resolve and they may only allow this if not in a retail food establishment that serves a highly susceptible population. These restricted food employees remain restricted until they are medically cleared or otherwise meet the criteria for removal from restriction as specified under section 122(d) (1) & (2) or section 122(e)(1) or (2).

In a retail food establishment that serves a highly susceptible population, food employees who are diagnosed with *norovirus*, *Shigella* spp., *E. coli* O157:H7 or other EHEC and initially symptomatic with vomiting or diarrhea, may not work on a restricted basis after being asymptomatic for at least 24 hours. These food employees must remain excluded until they are medically cleared or otherwise meet the criteria for removal from exclusion from a highly susceptible population under section 122(d) (1) or (2) or section 122(e) (1) or (2).

Food employees diagnosed with hepatitis A virus are always excluded if diagnosed within 14 days of exhibiting any illness symptom, until at least 7 days after the onset of jaundice, or until medically cleared as specified under section 122(b)(1) (4).

Food employees diagnosed with hepatitis A virus are always excluded if diagnosed within 14 days of exhibiting any illness symptom, until at least 7 days after the onset of jaundice, or until medically cleared as specified under section 122(b)(1)-(3).

A food employee with an anicteric infection with the hepatitis A virus has a mild form of hepatitis A without jaundice. Food employees diagnosed with an anicteric infection with the hepatitis A virus are excluded if they are within 14 days of any symptoms. Anicteric, diagnosed food employees may be removed from exclusion if more than 14 days have passed since they became symptomatic or if medically cleared. Asymptomatic food employees diagnosed with an active infection with the hepatitis A virus are also excluded until medically cleared.

Food employees diagnosed with typhoid fever (caused by a *Salmonella* Typhi infection) are always excluded, even without expressing gastrointestinal symptoms, since these symptoms are not typically exhibited with typhoid fever. Outbreaks of foodborne illness involving typhoid fever (*Salmonella* Typhi) have been traced to asymptomatic food employees who have transmitted the pathogen to food, causing illness. The high virulence combined with the extremely high infectivity of *S. Typhi* warrant exclusion from the retail food establishment until the food employee has been cleared by a physician or has completed antibiotic therapy.

Asymptomatic shedders are food employees who do not exhibit the symptoms of foodborne illness but who are identified through diagnosis, or laboratory confirmation of their stools to have norovirus, or any one of the three bacterial pathogens identified in their gastrointestinal system.

Despite lacking specific epidemiological evidence of transmission through food contaminated by food employees infected with *E. coli* O157:H7 or other EHEC/STEC bacteria are included with the 5 listed pathogens in the Rule. This is because of the documented ease of transmission from person-to-person in a day care setting and because characteristics of foodborne outbreaks suggest a low infectious dose and the potential for the organism to be transmitted through food contaminated by soiled hands. The severity and consequences of infection, including hemolytic uremic syndrome (HUS), associated with Shiga toxin-producing *E. coli* warrant the institution of disease interventions.

The risk that food employees who are asymptomatic shedders will transmit a communicable disease varies depending upon the hygienic habits of the worker, the food itself and how it is prepared, the susceptibility of the population served, and the infectivity of the organism. Restriction in a retail food establishment that does not serve a highly susceptible population affords protection for the general population and the immune-suppressed subset of the general population provided there is adequate attention to personal hygiene and avoidance of bare-hand contact with RTE foods.

To minimize the risk in all retail food establishments of the transmission of foodborne disease by an asymptomatic shedder and based on the factors listed above, all known asymptomatic shedders of the three bacterial pathogens are

either restricted or excluded, depending on the population served. Requiring restriction for asymptomatic shedders of all three of the bacterial pathogens results in a uniform criterion and is consistent with APHA-published recommendations in the "Control of Communicable Diseases Manual".

The regulatory authority may exercise its responsibility as it relates to confirmed cases of those diseases listed in section 120 to mitigate and further prevent an outbreak of disease by issuing exclusion/restriction orders and may likewise lift those orders once evidence demonstrates the threat has ended.

410 IAC 7-24-128 Hand cleaning and drying procedure

The hands are particularly important in transmitting foodborne pathogens. Food employees with dirty hands and/or fingernails may contaminate the food being prepared. Therefore, any activity which may contaminate the hands must be followed by thorough handwashing in accordance with the procedures outlined in the Rule.

Even seemingly healthy employees may serve as reservoirs for pathogenic microorganisms that are transmissible through food. Staphylococci, for example, can be found on the skin and in the mouth, throat, and nose of many employees. The hands of employees can be contaminated by touching their nose or other body parts.

Handwashing is a critical factor in reducing fecal-oral pathogens that can be transmitted from hands to RTE food as well as other pathogens that can be transmitted from environmental sources. Many employees fail to wash their hands as often as necessary and even those who do may use flawed techniques.

In the case of a food worker with one hand or a hand-like prosthesis, the Equal Employment Opportunity Commission has agreed that this requirement for thorough handwashing can be met through reasonable accommodation in accordance with the Americans with Disabilities Act. Devices are available which can be attached to a lavatory to enable the food worker with one hand to adequately generate the necessary friction to achieve the intent of this requirement.

The greatest concentration of microbes exists around and under the fingernails of the hands. The area under the fingernails, known as the "subungual space", has by far the largest concentration of microbes on the hand and this is also the most difficult area of the hand to decontaminate. Fingernail brushes, if used properly, have been found to be effective tools in decontaminating this area of the hand. Proper use of single-use fingernail brushes, or designated individual fingernail brushes for each employee, during the handwashing procedure can achieve up to a 5-log reduction in microorganisms on the hands.

There are two different types of microbes on the hands, transient and resident microbes. Transient microbes consist of contaminating pathogens which are loosely attached to the skin surface and do not survive or multiply. A moderate number of these organisms can be removed with adequate handwashing. Resident microbes consist of a relatively stable population that survive and multiply on the skin and they are not easily washed off the hands. Resident microbes on the hands are usually not a concern for potential contamination in food service.

All aspects of proper handwashing are important in reducing microbial transients on the hands. However, friction and water have been found to play the most important role. This is why the amount of time spent scrubbing the hands is critical in proper handwashing. It takes more than just the use of soap and running water to remove the transient pathogens that may be present. It is the abrasive action obtained by vigorously rubbing the surfaces being cleaned that loosens the transient microorganisms on the hands.

Research has shown a minimum 10-15 second scrub is necessary to remove transient pathogens from the hands and when an antimicrobial soap is used, a minimum of 15 seconds is required. Soap is important for the surfactant effect in removing soil from the hands and a warm water temperature is important in achieving the maximum surfactant effect of the soap.

Every stage in handwashing is equally important and has an additive effect in transient microbial reduction. Therefore, effective handwashing must include scrubbing, rinsing, and drying the hands. When done properly, each stage of handwashing further decreases the transient microbial load on the hands. It is equally important to avoid re-

contaminating hands by avoiding direct hand contact with heavily contaminated environmental sources, such as manually operated handwashing sink faucets, paper towel dispensers, and rest room door handles after the handwashing procedure. This can be accomplished by obtaining a paper towel from its dispenser before the handwashing procedure, then, after handwashing, using the paper towel to operate the hand sink faucet handles and restroom door handles.

Handwashing done properly can result in a 2-3 log reduction in transient bacteria and a 2-log reduction in transient viruses and protozoa. With heavy contamination of transient microbial pathogens, (i.e., > 10⁴ microbes, as found on hands contaminated with bodily wastes and infected bodily fluids) handwashing may be ineffective in completely decontaminating the hands. Therefore, a further intervention, such as a barrier between hands and RTE food is necessary.

410 IAC 7-24-129 When to wash hands

The hands may become contaminated when the food employee engages in specific activities. The increased risk of contamination requires handwashing immediately after the activities listed. The specific examples listed in the Rule section 129 are not intended to be all inclusive. Employees must wash their hands after any activity which may result in contamination of the hands.

410 IAC 7-24-130 Where to wash hands

Effective handwashing is essential for minimizing the likelihood of the hands becoming a vehicle of cross contamination. It is important that handwashing be done only at a properly equipped handwashing facility in order to help ensure that food employees effectively clean their hands. Handwashing sinks are to be conveniently located, always accessible for handwashing, maintained so they provide proper water temperatures and pressure, and equipped with suitable hand cleansers, and disposable towels and waste containers, or hand dryers. Nail brushes must be used when they are provided. It is inappropriate to wash hands in a food preparation sink since this may result in avoidable contamination of the sink and the food prepared therein. Service sinks may not be used for food employee handwashing since this practice may introduce additional hand contaminants because these sinks may be used for the disposal of mop water, toxic chemicals, and a variety of other liquid wastes. Such wastes may contain pathogens from cleaning the floors of food preparation areas and toilet rooms and discharges from ill persons.

410 IAC 7-24-131 Hand sanitizers (hand antiseptics)

410 IAC 7-24 uses the term “hand sanitizer” whereas in the 2005 FDA Model Food Code, the use of the term “hand sanitizer” was replaced by the term “hand antiseptic” to eliminate confusion with the term “sanitization,” a defined term in the Rule, and to more closely reflect the terminology used in the FDA Tentative Final Monograph for Health-Care Antiseptic Drug Products for OTC Human Use, Federal Register: June 17, 1994.

The term “sanitization” is typically used to describe control of bacterial contamination of inert objects or articles, or equipment and utensils, and other cleaned food-contact surfaces. The Rule definition of “sanitizer” requires a minimum microbial reduction of 5 logs, which is equal to a 99.999% reduction. The FDA bases the 5-log reduction on the AOAC International’s “Official Methods of Analysis 2003,” which requires a minimum 5-log reduction in microorganisms to achieve “sanitization.” Sanitizers used to disinfect food-contact equipment and utensils can easily achieve the 5-log reduction of microorganisms and often far exceed this minimum requirement. However, removing microorganisms from human skin is a totally different process and sterilization of human skin is nearly impossible to achieve without damaging the skin. Many antimicrobial hand agents typically achieve a much smaller reduction in microorganisms than the 5-log reduction required for “sanitization.” Therefore, the effect achieved from using antimicrobial hand agents is not consistent with the definition of “sanitization” in the Rule.

The word “antiseptic” is a Greek term, meaning “against putrefaction”, and eventually evolved into a second definition, meaning, “a substance used to destroy pathogenic microorganisms.” The term “antiseptic” is often used to describe agents used on skin to prevent infection of the skin. “Antiseptic” is defined under Section 201 (o) of the Federal Food, Drug, and Cosmetic Act (the act) (21 U.S.C. 321 (o)), as: “The representation of a drug, in its labeling, as an antiseptic shall be considered to be a representation of a germicide, except in the case of a drug purporting to be, or represented

as, an antiseptic for inhibitory use as a wet dressing, ointment, dusting powder, or such other use as involves prolonged contact with the body.”

Section 333.403 of the FDA Tentative Final Monograph for Health-Care Antiseptic Drug Products for OTC Human Use, Federal Register: June 17, 1994, defines a “health-care antiseptic” as an antiseptic-containing drug product applied topically to the skin to help prevent infection or to help prevent cross contamination. An “antiseptic hand wash” or “health-care personnel hand wash drug product” is defined in Section 333.403 of the Monograph as an antiseptic containing preparation designed for frequent use; it reduces the number of transient microorganisms on intact skin to an initial baseline level after adequate washing, rinsing, and drying; it is a broad spectrum, and persistent antiseptic containing preparation that significantly reduces the number of microorganisms on intact skin.

Replacing the term “hand sanitizer” with the term “hand antiseptic” allows the use of a more scientifically appropriate term that is used to describe reduction of microorganisms on the skin and may improve clarification and regulation of these products.

The provisions of section 131 are intended to ensure that an antimicrobial product applied to the hands is 1) safe and effective when applied to human skin, and 2) a safe food additive when applied to bare hands that come into direct contact with food.

Because of the need to protect workers and to ensure safe food, hand antiseptics must comply with both the human drug and the food safety provisions of the law. The prohibition against bare hand contact contained in section 171(b) applies only to an exposed RTE food.

As a Drug Product

There are two means by which a hand antiseptic is considered to be safe and effective when applied to human skin:

1. A hand antiseptic may be approved by FDA under a new drug application based on data showing safety and effectiveness and may be listed in the publication Approved Drug Products with Therapeutic Equivalence Evaluations. This document is maintained by the Food and Drug Administration, Center for *Salmonella* Drug Evaluation and Research, Office of Pharmaceutical Science, Office of Generic Drugs. Also known as the “Orange Book,” this document provides “product-specific” listings rather than listings by compound. It is published annually with monthly supplements and is available at <http://www.fda.gov/cder/ob/default.htm>. However, as of the end of 1998, no hand antiseptics are listed in this publication since no new drug applications have been submitted and approved for these products.
2. A hand antiseptic active ingredient may be identified by FDA in the monograph for OTC (over-the-counter) Health-Care Antiseptic Drug Products under the antiseptic hand wash category. Since hand antiseptic products are intended and labeled for topical antimicrobial use by food employees in the prevention of disease in humans, these products are “drugs” under the Federal Food, Drug, and Cosmetic Act § 201(g). As drugs, hand antiseptics and dips must be manufactured by an establishment that is duly registered with the FDA as a drug manufacturer; their manufacturing, processing, packaging, and labeling must be performed in conformance with drug Good Manufacturing Practices (GMP’s); and the product must be listed with FDA as a drug product. Products having the same formulation, labeling, and dosage form as those that existed in the marketplace on or before December 4, 1975, for hand antiseptic use by food handlers, are being evaluated under the Over-the-Counter (OTC) Drug Review by FDA’s Center for Drug Evaluation and Research. However, as of May 2005, a final OTC drug monograph for these products has not been finalized. Therefore, FDA has not made a final determination that any of these products are generally recognized as safe and effective (GRAS/E).

GRAS/E antimicrobial ingredients for hand sanitizer use by food handlers will be identified in a future final monograph issued under the OTC Drug Review. Information about whether a specific product is covered by the proposed monograph may be obtained from the tentative final monograph (TFM) for “Health Care Antiseptic Drug Products for OTC Human Use; Proposed Rule.” This TFM, which was published in the Federal Register of June 17, 1994 (59 FR 31402), describes the inclusion of hand sanitizers in this Review on page 31440 under Comment 28 of Part II. Information about whether a specific product is included in this proposed monograph may also be available from the manufacturer. Questions regarding acceptability of a hand antiseptic with respect to OTC compliance may be directed

to the Division of New Drugs and Labeling Compliance (HFD-310), Office of Compliance, Center for Drug Evaluation and Research, Food and Drug Administration, 11919 Rockville Pike, Rockville, MD 20852. Specific product label/promotional information and the formulation are required for determining a product's regulatory status.

As a Food Additive

To be subject to regulation under the food additive provisions of the Federal Food, Drug, and Cosmetic Act, the substances in a hand antiseptic must reasonably be expected to become a component of food based upon the product's intended use.

Where the substances in a hand antiseptic are reasonably expected to become a component of food based upon the product's intended use, circumstances under which those substances may be legally used include the following:

1. The intended use of a substance may be exempted from regulation as a food additive under 21 CFR 170.39 Threshold of regulation for substances used in food-contact articles. A review by FDA's Center for Food Safety and Applied Nutrition is required in order to determine whether such an exemption can be granted.
2. A substance may be regulated for the intended use as a food additive under 21 CFR 174 – Indirect Food Additives – General, and be listed along with conditions of safe use in 21 CFR 178 -Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers.
3. The intended use of a substance, including substances that contact food, such as those in hand antiseptics, may be “generally recognized as safe (GRAS)” within the meaning of the FFDCA. A partial listing of substances with food uses that are generally recognized as safe may be found in CFR Parts 182, 184, and 186. These lists are not exhaustive because the FFDCA allows for independent GRAS determinations. For the use of a substance to be GRAS within the meaning of the FFDCA, there must be publicly available data that demonstrate that the substance is safe for its intended use. There also must be a basis to conclude that there is a consensus among qualified experts that these publicly available data establish safety. If the use of a substance in food is GRAS, it is not subject to premarket review by FDA. While there is no legal requirement to notify FDA of an independent GRAS determination, a number of firms have chosen to do so with the expectation of receiving a response letter from FDA (see FDA's Inventory of GRAS Notices at <http://www.cfsan.fda.gov/~rdb/opa-gras.html>). Although such a letter does not affirm the independent GRAS determination, it is an opportunity for the firm to receive comment from FDA regarding the materials supporting its determination.
4. A substance may be the subject of a Food Contact Substance Notification that became effective in accordance with the FFDCA Section 409 (h). Substances that are the subject of an effective food-contact substance notification are listed, along with conditions of safe use, in the FDA Inventory of Effective Premarket Notifications for Food Contact Substances. This list is available on-line at <http://www.cfsan.fda.gov/~dms/opa-fcn.html>. A food-contact substance that is the subject of an effective notification submitted under FFDCA 409(h) does not include similar or identical substances manufactured or prepared by any person other than the manufacturer identified in that notification. The Division of Food Contact Substance Notifications does not certify or provide approvals for specific products. However, if the intended use of a substance in contact with food meets the requirements of 21 CFR 170.39. Threshold of regulation for substances used in food-contact articles, FDA may provide a letter to a firm stating that the intended use of this product is exempt from regulation as a food additive. However, the product must be the subject of a new drug application or under FDA's OTC Drug Review to be legally marketed.

Questions regarding the regulatory status of substances in hand antiseptics as food additives may be directed to the Division of Food Contact Substance Notifications, HFS-275, 5100 Paint Branch Parkway, College Park, MD 20740. It may be helpful or necessary to provide label/promotional information when inquiring about a specific substance.

Note: section 131 still refers to these products as “hand sanitizers” since it was published prior to the 2005 FDA Model Food Code.

410 IAC 7-24-132 Personal cleanliness

The hands are particularly important in transmitting foodborne pathogens. Food employees with dirty hands and/or fingernails may contaminate the food being prepared. Therefore, any activity which may contaminate the hands must be followed by thorough handwashing in accordance with the procedures outlined in the Rule.

Even seemingly healthy employees may serve as reservoirs for pathogenic microorganisms that are transmissible through food. *Staphylococci*, for example, can be found on the skin and in the mouth, throat, and nose of many employees. The hands of employees can be contaminated by touching their nose or other body parts.

410 IAC 7-24-133 Hand and arm maintenance

The requirement for fingernails to be trimmed, filed, and maintained is designed to address both the cleanability of areas beneath the fingernails and the possibility that fingernails or pieces of the fingernails may end up in the food due to breakage. Failure to remove fecal material from beneath the fingernails after defecation can be a major source of pathogenic organisms. Ragged fingernails present cleanability concerns and may harbor pathogenic organisms.

410 IAC 7-24-134 Jewelry prohibition

Items of jewelry, such as rings, bracelets, and watches may collect soil and the construction of the jewelry may hinder routine cleaning. As a result, the jewelry may act as a reservoir of pathogenic organisms transmissible through food.

The term “jewelry” generally refers to the ornaments worn for personal adornment and medical alert bracelets do not fit this definition. However, the wearing of such bracelets carries the same potential for transmitting disease-causing organisms to food. If a food worker wears a medical alert or medical information bracelet, the conflict between this need and the Rule’s requirements can be resolved through reasonable accommodation in accordance with the Americans with Disabilities Act. The PIC should discuss the Rule requirement with the employee and together they can work out an acceptable alternative to a bracelet. For example, the medical alert information could be worn in the form of a necklace or anklet to provide the necessary medical information without posing a risk to food. Alternatives to medical alert bracelets are available through a number of different companies (e.g., an internet search using the term “medical alert jewelry” leads to numerous suppliers).

An additional hazard associated with jewelry is the possibility that pieces of the item or the whole item itself may fall into the food being prepared. Hard foreign objects in food may cause medical problems for consumers, such as chipped and/or broken teeth and internal cuts and lesions.

410 IAC 7-24-135 Clean condition of outer clothing

Dirty clothing may harbor diseases that are transmissible through food. Food employees who inadvertently touch their dirty clothing may contaminate their hands. This could result in contamination of the food being prepared. Food may also be contaminated through direct contact with soiled clothing. In addition, employees wearing soiled clothes send a negative message to consumers about the level of sanitation in the establishment.

410 IAC 7-24-136 Eating, drinking, or using tobacco

Proper hygienic practices must be followed by food employees in performing assigned duties to ensure the safety of the food, prevent the introduction of foreign objects into the food, and minimize the possibility of transmitting disease through food. Smoking or eating by employees in food preparation areas is prohibited because of the potential that the hands, food, and food-contact surfaces may become contaminated. Insanitary personal practices, such as scratching the head, placing the fingers in or about the mouth or nose, and indiscriminate and uncovered sneezing or coughing may result in food contamination. Poor hygienic practices by employees may also adversely affect consumer confidence in the establishment. Food preparation areas, such as hot grills may have elevated temperatures and the excessive heat in these areas may present a medical risk to the workers as a result of dehydration. Consequently, in these areas food employees are allowed to drink from closed containers that are carefully handled.

410 IAC 7-24-137 Discharges from the eyes, nose, and mouth

Discharges from the eyes, nose, or mouth through persistent sneezing or coughing by food employees can directly contaminate exposed food, equipment, utensils, linens, and single-service and single-use articles. When these poor hygienic practices cannot be controlled, the employee must be assigned to duties that minimize the potential for contaminating food and surrounding surfaces and objects.

410 IAC 7-24-138 Effectiveness of hair restraint

Consumers are particularly sensitive to food contaminated by hair. Hair can be both a direct and indirect vehicle of contamination. Food employees may contaminate their hands when they touch their hair. A hair restraint keeps dislodged hair from ending up in the food and may deter employees from touching their hair.

FOOD

410 IAC 7-24-139 Food condition

410 IAC 7-24-140 Honest presentation of food

See also the public health reason for section 146

410 IAC 7-24-141 Discarding or reconditioning of unsafe, misbranded, adulterated or contaminated food

Pathogens may be transmitted from person to person through contaminated food. The potential spread of illness is limited when food is discarded if it may have been contaminated by employees who are infected, or are suspected of being infected, or by any person who otherwise contaminates it.

410 IAC 7-24-142 Food sources

Refer also to the public health reason for section 182

Source

A primary line of defense in ensuring that food meets the requirements of section 139 is to obtain food from approved sources, the implications of which are discussed below. However, it is also critical to monitor food products to ensure that, after harvesting and processing, they do not fall victim to conditions that endanger their safety, make them adulterated, or compromise their honest presentation. The regulatory community, industry, and consumers should exercise vigilance in controlling the conditions to which foods are subjected and be alert to signs of abuse. FDA considers food in hermetically sealed containers that are swelled or leaking to be adulterated and actionable under the Federal Food, Drug, and Cosmetic Act (FFD&C). Depending on the circumstances, rusted and pitted or dented cans may also present a serious potential hazard.

Food, at all stages of production, is susceptible to contamination. The source of food is important because pathogenic microorganisms may be present in the breeding stock of farm animals in feeds, in the farm environment, in waters used for raising and freezing aquatic foods, and in soils and fertilizers in which plant crops are grown. Chemical contaminants that may be present in field soils, fertilizers, irrigation water, and fishing waters can be incorporated into food plants and animals.

Sources of molluscan shellfish are a particular concern because shellfish are frequently consumed raw or in an undercooked state and thus receive neither heat treatment nor any other process that would destroy or inactivate microbial pathogens. For safety, these foods must be accompanied by certification that documents that they have been harvested from waters that meet the water quality standards contained in the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish. Certification also provides confidence that processing, packaging, and shipping have been conducted under sanitary conditions.

Food should be purchased from commercial supplies under regulatory control. Home kitchens, with their varieties of food and open entry to humans and pet animals are frequently implicated in the microbial contamination of food. Because commercial items seldom are eaten right away, the home kitchen's limited capacity for maintaining food at proper temperatures may result in considerable microbial growth and toxin production by microorganisms introduced through the diverse sources of contamination. Controlled processing is required for the safe preparation of food entering commerce.

Labeling - General

Sources of packaged food must be labeled in accordance with law. Proper labeling of foods allows consumers to make informed decisions about what they eat. Many consumers, as a result of an existing medical condition, may be sensitive to specific foods or food ingredients. This sensitivity may result in dangerous medical consequences should certain foods or ingredients be unknowingly consumed. In addition, consumers have a basic right to be protected from misbranding and fraud.

Labeling for Fish

Except for certain species of large tuna and raw molluscan shellfish, if fish are intended for raw consumption, they must be properly frozen before they are served. If this process is done off-premises, purchase specifications ensuring that proper freezing techniques are used to destroy parasites must be provided. Labeling or other information should accompany the product to advise as to whether the product was frozen properly. This is necessary because fish from natural bodies of water may carry parasitic worms that can infect and injure consumers who eat such raw fish dishes as sushi, ceviche, green (lightly marinated) herring, and cold-smoked salmon. The worms are often deeply imbedded inside fish muscle. Thorough freezing kills these worms if the fish are subjected to a low enough temperature for a long enough time.

Labeling for Juice (relates to section 152)

On July 8, 1998, FDA announced in the Federal Register a final rule that revised its food labeling regulations to require a warning statement on fruit and vegetable juice products that have not been processed to prevent, reduce, or eliminate pathogenic microorganisms that may be present. FDA took this action to inform consumers, particularly those at greatest risk, of the hazard posed by such juice products. FDA expects that providing this information to consumers will allow them to make informed decisions on whether to purchase and consume such juice products, thereby reducing the incidence of foodborne illnesses and deaths caused by the consumption of these juices.

On July 18, 2001 FDA announced a final rule designed to improve the safety of fruit and vegetable juice and juice products. Under the rule, juice processors must use Hazard Analysis and Critical Control Point (HACCP) principles for juice processing. Processors making shelf-stable juices or concentrates that use a single thermal processing step are exempt from the microbial hazard requirements of the HACCP regulation. Retail establishments where packaged juice is made and only sold directly to consumers, (such as juice bars) are not required to comply with this regulation.

Rather, the Rule requires fresh fruit or vegetable juices that are packaged at retail (untreated juices or beverages containing untreated juices that are offered to consumers as prepackaged foods) to be processed under HACCP with a 5 log reduction in pathogens of concern OR bear the warning statement as specified in 21 CFR Section 101.17(g). That statement is: "WARNING: This product has not been pasteurized and, therefore, may contain harmful bacteria that can cause serious illness in children, the elderly, and persons with weakened immune systems." Refer to the definition of juice. It is important to note that the definition of a juice includes puréed fruits and vegetables, which are commonly prepared for service to highly susceptible populations. Retail food establishments that serve a highly susceptible population (HSP) cannot serve prepackaged juice that bears the warning label and they must serve only pasteurized juice. For juice only, this population includes children who are age 9 or less and receive food in a school, day care setting, or similar facility that provides custodial care.

Unpackaged juice (glasses of juice prepared at a juice bar, for example) does not require the 5 log reduction nor a warning statement or other consumer advisory (juice is not an animal food and therefore not covered by section 196)

when prepared and served at retail. Usually the juice is served by the glass or in small batches compared to a commercial juice processor. The risk of using “drops” and damaged fruits or vegetables is much less at retail because of buyer specs that provide higher quality produce, meaning that fruits for juicing are less likely to be of a lower quality or damaged.

Additional information is available in the document, A Guidance for Industry. Warning and Notice Statement: Labeling of Juice Products, Small Entity Compliance Guide which can be found on the FDA Web Page <http://www.cfsan.fda.gov/~dms/juicguid.html> or obtained from the FDA Office of Nutritional Products Labeling and Dietary Supplements.

Labeling for Meat and Poultry

Retail food establishments that process and package meat or poultry in a form that is not RTE are obligated by Federal regulation to label the product with safe food handling instructions. The intent of this requirement is to ensure that all consumers are alerted to the fact that such products may contain bacteria and that food safety hinges upon their thoroughly cooking the product, regardless of where they obtain the products.

That is, the labeling would exist if they obtain their meat and poultry at an establishment that handles only prepackaged and pre-labeled products or if they obtain their meat or poultry at an operation such as a supermarket with a meat processing operation or from a small neighborhood butcher.

Labeling Guidance for Irradiated Raw Meat and Meat Products

In December 1999, the U.S. Department of Agriculture, Food Safety and Inspection Service (USDA/FSIS) issued a final regulation to permit the use of ionizing radiation to reduce foodborne pathogens, including *Escherichia coli* O157:H7, and extend the shelf life of raw refrigerated and frozen meat and meat products (Irradiation of Meat Food Products 64 Federal Register 72150, December 23, 1999).

The final regulations are published in Title 9 of the Code of Federal Regulations (9 CFR 424.21 Use of food ingredients and sources of radiation) and provide that raw refrigerated products may receive a maximum absorbed dose of no more than 4.5 kGy, and that frozen product receive no more than 7.0 kGy, in accordance with the FDA restrictions provided for in Title 21 of the Code of Federal Regulations (21 CFR 179.26(a) Ionizing radiation for the treatment of food, (a) Energy sources). The regulations further require that all irradiated meat and meat products bear labeling that reflects that the product was irradiated, or that the product contains an irradiated meat or poultry product. This labeling requirement is applicable even at retail facilities where irradiated coarse ground beef might be finely ground for retail sale, or in cases where irradiated product is combined with other non-irradiated meat or poultry product for retail sale.

In cases where the entire package of product is irradiated, the labeling must include both a statement and the international symbol, called the radura. Additionally, the product name must include the word “irradiated,” or the labeling must bear a disclosure statement, such as “treated with radiation” or “treated by irradiation.” If either statement is used, the logo must be placed in conjunction with the statement. If an irradiated meat or meat product is used to formulate a multi-ingredient product with other non-irradiated components, the irradiated meat ingredient must be identified as such in the ingredients statement, but the logo is not required. For example, the ingredients statement for a Chicken and Beef Sausage product that contains irradiated beef would be, Ingredients: chicken, irradiated beef, seasonings (salt, pepper, spice), and the logo would not be required to be present.

All labels for products produced at federally inspected establishments bearing statements about irradiation must be submitted to USDA/FSIS for evaluation and approval prior to use. Optional labeling statements about the purpose of the irradiation process may be included on the labeling of irradiated products provided they are not false or misleading and have been evaluated first by USDA/FSIS. If such statements indicate a specific benefit from irradiation, such as a reduction of microbial pathogens, such statements must be substantiated by processing documentation and validated through the processing and Hazard Analysis and Critical Control Point (HACCP) system. Such validation and documentation of the HACCP system would only be applicable in federally inspected establishments.

Because irradiation can substantially reduce and, in some situations, eliminate any detectable level of pathogenic bacteria, it is important that the meat products be held at the proper refrigerated temperatures to prevent growth of any pathogens present, and that the packaging is not compromised. Although co-mingling irradiated beef with non-irradiated meat or poultry is not prohibited under the current regulations, USDA/FSIS believes that such a process would decrease the benefit of irradiation by potentially exposing the irradiated product to pathogenic bacteria. While FSIS considers such commingling to be highly unlikely, if it did occur, a statement advising the consumer that the product contains both irradiated and non-irradiated components would be required.

The Radura, International Symbol



Further information about labeling irradiated raw meat is available through Directive 7700.1, Irradiation of Meat and Poultry Products, on the USDA/FSIS website at <http://http://www.fsis.usda.gov/OPPDE/rdad/FSISDirectives/7700.1Rev1.pdf>. Irradiation Questions & Answers can be found at <http://www.fsis.usda.gov/oppde/larc/policies/iradqa.pdf>.

Labeling for Raw Shell Eggs

The Code of Federal Regulations 21 CFR 101.17 Food Labeling warning, notice, and safe handling statements, paragraph (h) Shell eggs state in subparagraph (1), “The label of all shell eggs, whether in intrastate or interstate commerce, shall bear the following statement: ‘SAFE HANDLING INSTRUCTIONS: To prevent illness from bacteria; keep eggs refrigerated, cook eggs until yolks are firm, and cook foods containing eggs thoroughly.’” Further, in subparagraph (4) it states, “Shell eggs that have been, before distribution to consumers, specifically processed to destroy all viable *Salmonella* shall be exempt from the requirements of paragraph (h) of this section.”

Labeling for Whole-muscle, Intact Beef Steaks

In order for a retail food establishment operator to know that a steak is a whole-muscle, intact cut of beef that can therefore be undercooked and served without a consumer advisory, the incoming product must be labeled. Processors can accommodate this need at the retail level by developing proposed labels, obtaining the necessary USDA Food Safety Inspection Service review and approval, and appropriately affixing the labels to their products.

Refer also to public health reason for section 146.

410 IAC 7-24-143 Food in a hermetically sealed container

Processing food at the proper high temperature for the appropriate time is essential to kill bacterial spores that, under certain conditions in an airtight container, begin to grow and produce toxin. Of special concern is the lethal toxin of *Clostridium botulinum*, an organism whose spores (i.e., survival stages for non-growth conditions) are found throughout the environment. Even slight under processing of low acid food which is canned can be dangerous, because spoilage microbes are killed and there are no signs to warn consumers that botulinum spores have germinated into vegetative cells and produced their toxin. If these foods are not processed to be commercially sterile, they must be received frozen or under proper refrigeration.

Refer also to the public health reason for section 139 and 142

410 IAC 7-24-144 Packaging Integrity See public health reason for section 173

410 IAC 7-24-145 Accurate representation of packaged food using standards of identity

410 IAC 7-24-146 Food labels

The identity of a food in terms of origin and composition is important for instances when a food may be implicated in a foodborne illness and for nutritional information requirements. Ingredient information is needed by consumers who have allergies to certain food or ingredients. The appearance of a food should not be altered or disguised because it is a cue to the consumer of the food's identity and condition.

Recent illnesses and deaths from Shiga toxin-producing *Escherichia coli* have occurred across the United States as a result of people eating hamburgers that were contaminated and then undercooked. USDA issued final rules on

August 8, 1994 requiring all raw meat or poultry products have a safe-handling label or sticker or be accompanied by a leaflet that contains information on proper handling and cooking procedures.

Certain requirements in the CFR relating to aspects of nutrition labeling became effective in May, 1997. The following attempts to provide guidance regarding those requirements and exemptions as they relate to the retail environment and to alert regulators to authority that has been given to them by the Nutrition Labeling and Education Act (NLEA) of 1990. The statute and the CFR should be reviewed to ensure a comprehensive understanding of the labeling requirements.

- I. The following foods need not comply with nutrition labeling in 21CFR 101 referenced in section 146 of the Rule, if they do not bear a nutrient claim, health claim, or other nutrition information:
 - A. A food packaged in a retail food establishment if:
 1. The retail food establishment has total annual sales to consumers of no more than \$500,000 (or no more than \$50,000 in food sales alone), and
 2. The label of the food does not bear a reference to the manufacturer or processor other than the retail food establishment;
 - B. Low-volume food products if:
 1. The annual sales are less than 100,000 units for which a notification claiming exemption has been filed with FDA's Office of Nutritional Products Labeling and Dietary Supplements Food Labeling by a small business with less than 100 full-time equivalent employees, or
 2. The annual sales are less than 10,000 units by a small business with less than 10 full-time equivalent employees;
 - C. Food products served in retail food establishments with facilities for immediate consumption, such as restaurants, cafeterias, and mobile retail food establishments and foods sold only in those establishments;
 - D. Food products similar to those specified in the preceding bullet, but that are sold by retail food establishments without facilities for immediate consumption, such as bakeries and grocery stores if the food is:
 1. RTE but not necessarily for immediate consumption,
 2. Prepared primarily in the retail food establishment from which it is sold; and
 3. Not offered for sale outside the retail food establishment;
 - E. Foods of no nutritional significance, such as coffee;
 - F. Bulk food for further manufacturing or repacking; and
 - G. Raw fruits, vegetables, and fish
- II. Food packaged in a food processing plant or another food establishment, shall meet the requirements specified in section 146 of the Rule and enforcement by the regulatory authority is authorized in the NLEA, Section 4, State Enforcement.

In 1998, 21 CFR Part 73, Section 73.75 was amended to address canthaxanthin as a color additive for salmon fish. According to the FDA Regulatory Fish Encyclopedia, the family Salmonidae includes pink salmon, Coho salmon, Sockeye salmon, Chinook salmon, Atlantic salmon, chum salmon, rainbow trout, cutthroat trout, and brown trout. This color additive may be in the feed that is fed to aquaculture fish, and when those fish are placed into a bulk container for shipment, the bulk container must bear a label declaring the presence of canthaxanthin. That same label information must be displayed at retail when those fish are offered for sale.

The 21 CFR Section 73.75(d) (4) requires that the presence of the color additive in salmonid fish that have been fed feeds containing canthaxanthin be declared in accordance with 21 CFR 101.22(b), (c), and (k) (2) and 101.100(a) (2). For additional information, see the Federal Register announcement 63 FR 14814, March 27, 1998, Listing of Color Additives Exempt from Certification; Canthaxanthin.

On August 2, 2004, President Bush signed into law the Food Allergen Labeling and Consumer Protection Act of 2004 (Public Law 108-282). This new law amended Sections 201 and 403 of the Federal Food, Drug, and Cosmetic Act to establish food allergen labeling requirements for all packaged foods regulated by FDA. The new provisions require

that all affected packages of food labeled on or after January 1, 2006 must identify on the label the names of the food sources of any major food allergens (i.e., the following eight foods and any protein derived from them: milk, egg, fish, crustacean shellfish, tree nuts, wheat, peanuts, and soybeans) used as ingredients in the food. The names of the food sources are the same as the names of the eight foods that are major food allergens, with the exception that for fish, crustacean shellfish, and tree nuts, their respective food source names are the specific species of fish (e.g., bass, flounder, or cod), the specific species of crustacean shellfish (e.g., crab, lobster, or shrimp), and the specific types of tree nuts (e.g., almonds, pecans, or walnuts). *This is Federal Law and has not been adopted into Indiana Rule and cannot be enforced in Indiana at this time.*

410 IAC 7-24-147 Fluid milk and milk products

Milk which is a staple for infants and very young children with incomplete immunity to infectious diseases, is susceptible to contamination with a variety of microbial pathogens, such as Shiga toxin-producing *Escherichia coli*, *Salmonella* spp., and *Listeria monocytogenes*, and provides a rich medium for their growth. This is also true of milk products. Pasteurization is required to eliminate pathogen contamination in milk and products derived from milk. Dairy products are normally perishable and must be received under proper refrigeration conditions.

410 IAC 7-24-149 Eggs and milk products; pasteurized

Liquid egg, fluid milk, and milk products are especially good growth media for many types of bacteria and must be pasteurized. Pasteurization is a heat process that will kill or inactivate bacteria and other harmful microorganisms likely to be in PHF. Freezing and drying of unpasteurized products will stop microbial growth and may reduce their bacterial populations; however, some organisms will survive because neither process invariably kills bacteria. Under certain conditions, freezing and drying may preserve microbes. An alternative to pasteurization may be applicable to certain cheese varieties cured or aged for a specified amount of time prior to marketing for consumption.

410 IAC 7-24-150 Shell eggs

The official Indiana standards for the quality of shell eggs contained in 370 IAC 1-1 are applicable only to eggs that are the product of the domesticated chicken hen and are in the shell. For additional information go to the Indiana State Egg Board, Purdue University Animal Science Department Poultry Science Building, 125 S. Russell Street, West Lafayette, Indiana 47907-2042, Phone: 765-494-8510, <http://www.ansc.purdue.edu/ISEB/>.

Damaged shells permit the entry of surface bacteria to the inside of eggs. Eggs are an especially good growth medium for many types of bacteria. Damaged eggs must not be used as food.

The Definition of "Restricted Egg" contains several terms that are explained in this paragraph. An egg may be restricted because it is a/an:

- A. "Check" meaning an egg that has a broken shell or crack in the shell, but has its shell membranes intact and contents not leaking.
- B. "Dirty egg or Dirties" meaning an egg that has a shell that is unbroken and has adhering dirt, foreign material, or prominent stains.
- C. "Incubator reject" meaning an egg that has been subjected to incubation and has been removed from incubation during the hatching operations as infertile or otherwise unhatchable.
- D. "Inedible" meaning eggs of the following descriptions: black rots, yellow rots, white rots, mixed rots, sour eggs, eggs with green whites, eggs with stuck yolks, moldy eggs, musty eggs, eggs showing blood rings, and eggs containing embryo chicks (at or beyond the blood ring stage),
- E. "Leaker" meaning an egg that has a crack or break in the shell and shell membranes to the extent that the egg contents are exposed or are exuding or free to exude through the shell.
- F. "Loss" meaning an egg that is unfit for human food because it is smashed or broken so that its contents are leaking; or overheated, frozen, or contaminated; or an incubator reject; or because it contains a bloody white, large meat spots, a large quantity of blood, or other foreign material. On December 5, 2000 Federal regulations were amended to require that shell egg cartons bear safe handling instructions and be placed under refrigeration at 45°F or lower upon delivery at retail establishments (65 FR 76091, December 5, 2000, Food

Labeling, Safe Handling Statements, Labeling of Shell Eggs; Refrigeration of Shell Eggs Held for Retail Distribution).

The amended provisions include:

- 21 CFR Part 16 Regulatory Hearing before the Food and Drug Administration, § 16.5 Inapplicability and limited applicability, (4) A hearing on an order for relabeling, diversion or destruction of shell eggs
- 21 CFR Part 101 Food Labeling § 101.17 Food labeling warning, notice, and safe handling statements, (h) Shell eggs.
- 21 CFR Part 115 Shell Eggs, § 115.50 Refrigeration of shell eggs held for retail distribution. The labeling rule became effective September 4, 2001, and the refrigeration rule became effective June 4, 2001. These rules are one part of a larger farm-to-table approach for ensuring the safety of our nation's egg supply. The public health goal is a 50 percent reduction in all salmonellosis and a 50 percent reduction in *Salmonella enteritidis* illnesses by 2010.

Not included in the term "egg" are baluts. Although generally consumed on a sporadic, regional basis, baluts are considered a delicacy among some Philippine and Vietnamese populations. They are derived from fertile eggs; typically duck eggs, subjected to incubation temperatures for a period of time less than necessary for the embryo to hatch resulting in a partially formed embryo within the shell. Under the Egg Products Inspection Act (EPIA), an egg is typically considered adulterated if it has been subjected to incubation. However, in 9 CFR 590.5, baluts are specifically exempted from inspection as eggs under the EPIA.

In producing baluts, fertile duck eggs are incubated for approximately 18 days at a temperature of 108.5°F in incubators with a relatively high humidity. (Complete development and hatching would take place in 28 days.) Under these conditions, the potential for growth of transovarian *Salmonella* organisms, such as *S. enteritidis* within the shell, and the potential for an increase in pathogenic micro flora on the shell itself, are increased. Where chicken eggs are used in preparing baluts, the incubation period may only be 14 days at an incubation temperature of 99°F. A balut is a PHF subject to time/temperature management including proper cooking and hot and cold holding. Baluts are typically boiled and packed in salt before sale or service.

The term egg does not include the eggs of reptile species, such as alligators and turtles. Alligator eggs are available for sale in some parts of the southern United States.

In some restaurants, the menu item "Alligator Eggs" is sometimes made of alligator egg, but other times is simply a fanciful name for a menu item that may include seafood items, such as shrimp, but contains no alligator egg. Sea turtle eggs have been consumed in Asian and Latin American Countries. However, turtle eggs are not mentioned in the definitions section because sea turtles (Loggerhead, East Pacific Green, Leatherback, Hawksbill, Kemp's Ridley, and Olive Ridley) are protected by The Endangered Species Act of 1973 and therefore may not be sold or consumed. This Act, with respect to turtle eggs, is enforced by the United States Department of Interior, U.S. Fish and Wildlife Service, Washington, DC.

410 IAC 7-24-151 Pasteurized eggs; substitute for raw shell eggs for certain recipes

Raw or undercooked eggs that are used in certain dressings or sauces are particularly hazardous because the virulent organism *Salmonella enteritidis* may be present in raw shell eggs. Pasteurized eggs provide an egg product that is free of pathogens and is a RTE food. The pasteurized product should be substituted in a recipe that requires raw or undercooked eggs.

410 IAC 7-24-152 Juice treated

Refer to the public health reason for section 153

410 IAC 7-24-153 Pasteurized food and prohibited food

Also see the public health reason for section 142.

The Rule provisions that relate to highly susceptible populations are combined in this section for ease of reference and to add emphasis to special food safety precautions that are necessary to protect those who are particularly vulnerable to foodborne illness and for whom the implications of such illness can be dire.

As a safeguard for highly susceptible populations from the risk of contracting foodborne illness from juice, prepackaged juice is required to be obtained pasteurized or in a commercially sterile, shelf-stable form in a hermetically sealed container. It is important to note that the definition of a “juice” means it is served as such or used as an ingredient in beverages. Puréed fruits and vegetables, which are commonly prepared as food for service to highly susceptible populations, are not juices and do not require HACCP plans or compliance with 21 CFR Part 120. There are documented cases of foodborne illness throughout the United States that were associated with the consumption of various juice products contaminated with microorganisms, such as *Cryptosporidium*, Shiga toxin-producing *Escherichia coli*, *Salmonella* spp., and *Vibrio cholera*. As new information becomes available, the Rule will be modified or interim interpretive guidance will be issued regarding foodborne illness interventions for on-site juicing and puréeing.

The 21 CFR 120 regulation applies to products sold as juice or used as an ingredient in beverages. This includes fruit and vegetable purees that are used in juices and beverages, but is not intended to include freshly prepared fruit or vegetable purees that are prepared on-site in a facility for service to a highly susceptible population.

In lieu of meeting the requirements of 21 CFR 120, juices that are produced as commercially sterile products (canned juices) are acceptable for service to a highly susceptible population. Persons providing pureed meals to highly susceptible populations may also wish to use fruit and vegetables that are produced as commercially sterile products (canned fruit or vegetables) as a means of enhancing food safety.

Salmonella often survives traditional preparation techniques. It survives in a lightly cooked omelet, French toast, stuffed pasta, and meringue pies. In 1986, there was a large multistate outbreak of *Salmonella enteritidis* traced to stuffed pasta made with raw eggs and labeled “fully cooked.” Eggs remain a major source of these infections, causing large outbreaks when they are combined and undercooked as was the case in the 1986 outbreak linked to stuffed pasta. Therefore, special added precautions need to be in place with those most susceptible to foodborne illness.

Operators of retail food establishments serving highly susceptible populations may wish to discuss buyer specifications with their suppliers. Such specifications could stipulate eggs that are produced only by flocks managed under a *Salmonella enteritidis* control program that is recognized by a regulatory agency that has animal health jurisdiction. Such programs are designed to reduce the presence of *Salmonella enteritidis* in raw shell eggs. In any case, the retail food establishment operator must use adequate time and temperature controls within the establishment to minimize the risk of a foodborne illness outbreak relating to *Salmonella enteritidis*.

Since 1995, raw seed sprouts have emerged as a recognized source of foodborne illness in the United States. The FDA and CDC have issued health advisories that persons who are at a greater risk for foodborne disease should avoid eating raw alfalfa sprouts until such time as intervention methods are in place to improve the safety of these products. Further information is available at the FDA website, <http://www.fda.gov>, by entering “sprouts” in the search window.

Although the Rule’s allowance for ISDH to grant a variance (refer to section 114) is applicable to all the Rule provisions, variance requests related to the preparation of food for highly susceptible populations must be considered with particular caution and scrutiny. With all variances, the hazard(s) must be clearly identified and controlled by a HACCP plan that is instituted in conjunction with a standard operating plan that implements good retail practices. Variances that will impact a highly susceptible population must be considered in light of the fact that such a population is at a significantly higher risk of contracting foodborne illnesses and suffering serious consequences including death from those illnesses, than is the general population.

Section 153(5)(b) requires a HACCP plan for the use of raw shell eggs when eggs are combined in retail food establishments serving highly susceptible populations. A variance is not required since the HACCP plan criteria are specific, prescriptive, and conservative and require a cooking temperature and time to ensure destruction of *Salmonella enteritidis*.

Re-service of food

The 2005 FDA Model Food Code addresses two issues concerning persons in medical isolation:

1. Contamination from an isolated patient to others outside.

The re-service of any food including unopened, original, intact packages in sound condition, of non-PHF from a person in isolation or quarantine for use by anyone else (other patients, clients, or consumers) is not permitted. The “isolation or quarantine” terminology in the Rule text refers to a patient-care setting that isolates the patient, thereby preventing spread of key pathogens to other patients and healthcare workers. Once food packages come to a contact isolation room, they stay there until the patient uses or discards them. If packages of food are still in the room when the patient is discharged or moved from isolation, they must be discarded.

2. Contamination from the outside into a room with a patient in a “protective environment” isolation setting which protects the patient from contacting pathogens from other patients, healthcare workers, or other persons. Packages of food from any patients, clients or other consumers should not be re-served to persons in protective environment isolation. Precautions similar to the isolation setting apply to this setting, i.e., once an unopened, original, intact package of condiment is delivered to this patient, the package stays there until used or discarded. New (not re-served) packages of food should be delivered to this patient each time.

To summarize the key difference between the two scenarios:

- Food packages served to patients in contact isolation may not be re-served to other patients because of the potential for disease transmission to other patients.
- Patients in protective environments should not be re-served with food packages from other patients because of the potential for disease transmission to the protective environment patient.

410 IAC 7-24-154 Fish

After December 18, 1997, all processors of fish are required by 21 CFR 123 to have conducted a hazard analysis of their operation, identify each hazard that is reasonably likely to occur, and implement a HACCP plan to control each identified hazard. Retailers should assure that their seafood suppliers have complied with this requirement. Hazards known to be associated with specific fish species are discussed in the FDA Fish and Fishery Products Hazards and Controls Guide, available from the FDA Office of Seafood. Species-related hazards include pathogens, parasites, natural toxins, histamine, chemicals, and drugs.

The seafood implicated in histamine poisoning are the scombroid toxin-forming species, defined in 21 CFR 123.3(m) as meaning bluefish, mahi-mahi, tuna, and other species, whether or not in the family Scombridae, in which significant levels of histamine may be produced in the fish flesh by decarboxylation of free histidine as a result of exposure of the fish after capture to temperatures that allow the growth of mesophilic bacteria.

Ciguatera toxin is carried to humans by contaminated fin fish from the extreme southeastern U.S., Hawaii, and subtropical and tropical areas worldwide. In the south Florida, Bahamian, and Caribbean regions, barracuda, amberjack, horse-eye jack, black jack, other large species of jack, king mackerel, large groupers, and snappers are particularly likely to contain ciguatoxin. Many other species of large predatory fishes may be suspect. In Hawaii and throughout the central Pacific, barracuda, amberjack, and snapper are frequently ciguatoxic, and many other species both large and small are suspect. Mackerel and barracuda are frequently ciguatoxic from mid to northeastern Australian waters.

Recreationally Caught Fish

Recreationally caught fish received for sale or service may be approved by the regulatory authority. The EPA recognizes that fish are a healthy part of our diet and recognizes fishing as an all-American recreational pastime, however, they add the cautionary note that some individuals, such as pregnant women and small children, may need to

limit their intake of certain noncommercial fish. Recreationally caught fish may contain possible contaminants that may pose health risks. Fish advisories can be found in EPA Listing of Fish Advisories the EPA website at: <http://www.epa.gov/waterscience/fish/> Check the Environmental Epidemiology website for the Indiana advisory.

States issue fish consumption advisories if elevated concentrations of chemicals such as mercury or dioxin are found in local fish. For most people, the risk from mercury by eating fish is not a health concern. Yet, some fish and shellfish contain higher levels of mercury that may harm an unborn baby or young child's developing nervous system. Therefore, the FDA and the EPA recently advised women who may become pregnant, pregnant women, nursing mothers, and young children to avoid some types of fish and eat fish and shellfish that have lower levels of mercury, (<http://www.epa.gov/waterscience/fishadvice/advice.html>) and Indiana State Department of Health Fish Advisory <http://www.in.gov/isdh/23650.htm>.

State-issued advisories apply primarily to non-commercial fish obtained through sport, recreation, and subsistence activities. Each advisory is different; it may recommend unrestricted, limited, or totally restricted consumption; may be targeted to everyone or limited to women, children, or other people at risk; and may apply to certain species or sizes of fish or a specific waterbody.

States may issue safe-eating guidelines in addition to issuing fish advisories. A fish advisory is issued to warn the public of the potential human health risks from chemical contamination of certain species from particular types of waterbodies, such as lakes, rivers, and/ or coastal waters within the State. In contrast, a safe-eating guideline is issued to inform the public that fish from specific waterbodies have been tested for chemical contaminants and the fish from these waters are safe to eat without consumption restrictions.

Regulatory authorities are encouraged to monitor and review the National Listing of Fish Advisories (See August 2004 EPA Fact Sheet at <http://www.epa.gov/waterscience/fish/>) well as the local listings, as part of the decision-making process regarding the approval of recreationally caught fish being used in retail food establishments.

410 IAC 7-24-155 Molluscan shellfish

Pathogens found in waters from which molluscan shellfish are harvested can cause disease in consumers. Molluscan shellfish include: 1) oysters; 2) clams; 3) mussels; and, 4) scallops, except where the final product is the shucked adductor muscle only. The pathogens of concern include both bacteria and viruses.

Pathogens from the harvest area are of particular concern in molluscan shellfish because: 1) environments in which molluscan shellfish grow are commonly subject to contamination from sewage, which may contain pathogens, and to naturally occurring bacteria, which may also be pathogens; 2) molluscan shellfish filter and concentrate pathogens that may be present in surrounding waters; and, 3) molluscan shellfish are often consumed whole, either raw or partially cooked.

To minimize the risk of molluscan shellfish containing pathogens of sewage origin, State and foreign government agencies, called Shellfish Control Authorities, classify waters in which molluscan shellfish are found, based, in part, on an assessment of water quality. As a result of these classifications, molluscan shellfish harvesting is allowed from some waters, not from others, and only at certain times or under certain restrictions from others. Shellfish Control Authorities then exercise control over the molluscan shellfish harvesters to ensure that harvesting takes place only when and where it has been allowed.

Significant elements of Shellfish Control Authorities' efforts to control the harvesting of molluscan shellfish include: 1) a requirement that containers of in-shell molluscan shellfish (shellstock) bear a tag that identifies the type and quantity of shellfish, harvester, harvest location, and date of harvest; and, 2) a requirement that molluscan shellfish harvesters be licensed; 3) a requirement that processors that shuck molluscan shellfish or ship, reship, or repack the shucked product be certified; and, 4) a requirement that containers of shucked molluscan shellfish bear a label with the name, address, and certification number of the shucker-packer or repacker.

Pathogens, such as *Vibrio vulnificus*, *Vibrio parahaemolyticus*, *Vibrio cholerae*, and *Listeria monocytogenes* that may be present in low numbers at the time that molluscan shellfish are harvested, may increase to more hazardous levels if

they are exposed to time/temperature abuse. To minimize the risk of pathogen growth, Shellfish Control Authorities place limits on the time between harvest and refrigeration. The length of time is dependent upon either the month of the year or the average monthly maximum air temperature (AMMAT) at the time of harvest, which is determined by the Shellfish Control Authority.

Paralytic shellfish poisoning (PSP) results from shellfish feeding upon toxic microorganisms, such as dinoflagellates. In the U.S., PSP is generally associated with the consumption of molluscan shellfish from the northeast and northwest coastal regions of the U.S. PSP in other parts of the world has been associated with molluscan shellfish from environments ranging from tropical to temperate waters. In addition, in the U.S., PSP toxin has recently been reported from the viscera of mackerel, lobster, dungeness crabs, tanner crabs, and red rock crabs.

Neurotoxic shellfish poisoning (NSP) in the U.S. is generally associated with the consumption of molluscan shellfish harvested along the coast of the Gulf of Mexico, and, sporadically, along the southern Atlantic coast. There has been a significant occurrence of toxins similar to NSP in New Zealand, and some suggestions of occurrence elsewhere. For diarrhetic shellfish poisoning there has been no documented occurrence to date in the U.S. However, instances have been documented in Japan, southeast Asia, Scandinavia, western Europe, Chile, New Zealand, and eastern Canada.

Amnesic shellfish poisoning (ASP) is generally associated with the consumption of molluscan shellfish from the northeast and northwest coasts of North America. It has not yet been a problem in the Gulf of Mexico, although the algae that produce the toxin have been found there. ASP toxin has recently been identified as a problem in the viscera of dungeness crab, tanner crab, red rock crab, and anchovies along the west coast of the United States.

Marine toxins are not ordinarily a problem in scallops if only the adductor muscle is consumed. However, products, such as roe-on scallops and whole scallops do present a potential hazard for natural toxins.

To reduce the risk of illness associated with raw shellfish consumption, the Food and Drug Administration (FDA) administers the National Shellfish Sanitation Program (NSSP). The NSSP is a tripartite, cooperative action plan involving Federal and State public health officials and the shellfish industry. Those groups work together to improve shellfish safety. States regularly monitor waters to ensure that they are safe before harvesting is permitted. FDA routinely audits the States' classification of shellfish harvesting areas to verify that none pose a threat to public health. Patrolling of closed shell fishing waters minimizes the threat of illegal harvesting or "bootlegging" from closed waters. Bootlegging is a criminal activity and a major factor in shellfish-borne illnesses.

Purchases from certified dealers that adhere to NSSP controls is essential to keep risks to a minimum.

410 IAC 7-24-156 Shucked shellfish; packaging and identification

Plastic containers commonly used throughout the shellfish industry for shucked product bear specific information regarding the source of the shellfish as required by the NSSP Guide for the Control of Molluscan Shellfish. These containers must be nonreturnable so that there is no potential for their subsequent reuse by shellfish packers which could result in shucked product that is inaccurately identified by the label. The reuse of these containers within the retail food establishment must be assessed on the basis of the Rule's criteria under section 229 for multi-use containers and the likelihood that they will be properly relabeled to reflect their new contents.

410 IAC 7-24-157 Shellstock identification

Accurate source identification of the harvesting area, harvester, and dealers must be contained on molluscan shellstock identification tags so that if a shellfish-borne disease outbreak occurs, the information is available to expedite the epidemiological investigation and regulatory action.

410 IAC 7-24-158 Shellstock condition

Dirty, damaged, or dead shellstock can contaminate and degrade live and healthy shellstock and lead to foodborne illness. Harvesters have the primary responsibility for culling shellstock, but this responsibility continues throughout the distribution chain.

410 IAC 7-24-159 Molluscan shellfish original container

Lot separation is critical to isolating shellfish implicated in illness outbreaks and tracking them to their source. Proper identification is needed for tracing the origin and determining conditions of shellfish processing and shipment. If the lots are commingled at retail, traceability is undermined and the root of the problem may remain undetected. If no causative factors are identified in the retail food establishment, tracing the incriminated lot helps in identifying products that need to be recalled or growing waters that may need to be closed to harvesting.

When shucked shellfish are prepackaged in consumer self service containers, the labeling information as specified under section 156 must be recorded on a log sheet to correlate with the date of sale of the consumer sized containers.

410 IAC 7-24-160 Shellstock; maintaining identification

Accurate records that are maintained in a manner that allows them to be readily matched to each lot of shellstock provide the principal mechanism for tracing shellstock to its original source. If an outbreak occurs, regulatory authorities must move quickly to close affected growing areas or take other appropriate actions to prevent further illnesses. Records must be kept for 90 days to allow time for hepatitis A virus infections, which have an incubation period that is significantly longer than other shellfish-borne diseases, to become evident. The 90-day requirement is based on the following considerations:

Shelf-life of the product.....	14 days
Incubation period.....	56 days
Medical diagnosis and confirmation.....	5 days
Reporting.....	5 days
Epidemiological investigation.....	10 days
Total.....	90 days

In reality and as stated in the provision, the 90-day “clock” starts at the time the container of shellstock is emptied. Starting from the date of harvest is not correct because the shellstock may be sold/consumed in less than the 14 days of the shelf life cited in the chart above. Therefore, the 90 days may expire and the tag discarded before an illness is reported and investigated.

Shellstock could be frozen in the food establishment during the 14-day estimated shelf life period, which would effectively stop the clock on the shelf life. The shellstock could be thawed and consumed past the 14-day shelf life. In this case, the 90 days would expire before consumption if the clock started 90 days from the harvest date.

Freezing shellstock in the food establishment is not usually done because, although oysters-in-the-shell can be frozen with fair results, they do not have the same texture and appearance of a fresh oyster when thawed. Commercially frozen oysters are frozen rapidly to retain product quality.

410 IAC 7-24-161 Molluscan shellfish tanks

Shellfish are filter feeders allowing concentration of pathogenic microorganisms that may be present in the water. Due to the number of shellfish and the limited volume of water used, display tanks may allow concentration of pathogenic viruses and bacteria.

Since many people eat shellfish either raw or lightly cooked, the potential for increased levels of pathogenic microorganisms in shellfish held in display tanks is of concern. If shellfish stored in molluscan shellfish tanks are offered for consumption, certain safeguards must be in place as specified in a detailed HACCP plan that is approved by the regulatory authority. Opportunities for contamination must be controlled or eliminated. Procedures must emphasize strict monitoring of the water quality of the tank including the filtering and disinfection system.

410 IAC 7-24-162 Parasite destruction

Also refer to the public health reason for section 142

Lightly cooked, raw, raw-marinated, and cold-smoked fish may be desired by consumers for taste or perceived nutritional reasons. In order to ensure destruction of parasites, fish may be frozen before service as an alternative public health control to that which is provided by adequate cooking. Candling or other visual inspection techniques are not adequate to avoid the risk of parasites from fish which have not been frozen.

The recommended control strategies refer to the ambient air temperature during freezing and to the length of time that the fish is held at the appropriate freezer temperature, or the length of time that the fish is held after it is solid frozen, whichever is appropriate. The parasite hazard is not considered to be reasonably likely to occur if the finished product is fish eggs that have been removed from the skein (the tissue that contains the egg mass) and rinsed.

In response to information provided to the FDA Office of Seafood, the Fish and Fisheries Products Hazards and Controls Guidance lists certain species of tuna as not being susceptible to parasites of concern and therefore exempted from the freezing requirements that apply to other fish species that are consumed raw. The Fish and Fisheries Products Hazards and Controls Guidance states that species that normally have parasites as a result of consuming infected prey, apparently do not have the same parasite hazard when raised on pelleted food in an aquaculture operation. On the other hand, aquacultured fish that are fed processing waste and by-catch fish may have a parasite hazard, even when wild caught fish of that species do not normally have a parasite hazard. Feed must not contain any live parasites. For example, the use of fresh fish meat in feed could transmit such parasites. Only heat treated feed or feed otherwise produced in a manner that would kill parasite intermediate stages infective to the aquacultured fish, such as most pelleted feeds, should be used.

410 IAC 7-24-163 Records; creation and retention

Records must be maintained to verify that the critical limits required for food safety are being met. Records provide a check for both the operator and the regulator in determining that monitoring and corrective actions have taken place.

While the Country of Origin Labeling requirements

<http://www.ams.usda.gov/AMSV1.0/ams.fetchTemplateData.do?template=TemplateM&navID=CountryofOriginLabeling&rightNav1=CountryofOriginLabeling&topNav=&leftNav=CommodityAreas&page=CountryOfOriginLabeling&act=cntryoforgnlbl>, effective September 30, 2004, mandate identification of wild and farm-raised fish and shellfish, the requirements do not address contents of pelleted feed used in the aquaculture operation. Documentation must be available in the retail food establishment from the source-through-purchase specifications or labeling that pelleted feed used did not contain fresh fish or plankton.

Follow the guidance provided in:

“The Fish and Fisheries Products Hazards and Controls Guidance”

Table #3-1 – “Potential Vertebrate Species Related Hazards” and

Table #3-2 – “Potential Invertebrate Species Related Hazards”

These can be found at <http://www.cfsan.fda.gov/~comm/haccp4.html>.

410 IAC 7-24-164 Wild mushrooms

Over 5000 species of fleshy mushrooms grow naturally in North America. The vast majority have never been tested for toxicity. It is known that about 15 species are deadly and another 60 are toxic to humans whether they are consumed raw or cooked. An additional 36 species are suspected of being poisonous, whether raw or cooked. At least 40 other species are poisonous if eaten raw, but are safe after proper cooking.

Some wild mushrooms that are extremely poisonous may be difficult to distinguish from edible species. In most parts of the country there is at least one organization that include individuals who can provide assistance with both identification and program design. Governmental agencies, universities, and mycological societies are examples of such groups. If a retail food establishment chooses to sell wild mushrooms, management must recognize and address the need for a sound identification program for providing safe wild mushrooms.

Regulatory authorities have expressed their difficulty in determining what constitutes a “wild mushroom identification expert” and enforcing the Rule provisions associated with it. In 1998, the CFP attempted to alleviate this problem

through the formation of a committee that was charged with determining what constitutes a wild mushroom expert. However, the committee was unable to provide this information in a practical, useful manner for State and local regulators within the constraints of the Rule. The 2000 CFP recommended and FDA accepted the committee's alternative solution that a brochure be developed that will provide information on what constitutes a wild mushroom expert.

The CFP's recommendation attempts to provide the necessary information in a practical, useful manner for all stakeholders, and yet still convey the highest level of public health protection. The CFP committee suggested that written buyer specifications place more responsibility on the retail food establishment to ensure that wild mushrooms are obtained from a safe source, and also provides State and local regulators a template to use in ensuring wild mushrooms sold at retail are obtained from a safe source.

However, the recommendation for written buyer specifications will not replace the Rule until the brochure is developed and accepted by the CFP and FDA and the Rule amended to adopt such language. In the interim, the following guidance is provided regarding the identification of wild mushrooms:

A retail food establishment that sells or serves mushroom species picked in the wild shall have a written buyer specification that requires identification of:

- (1) The Latin binomial name, the author of the name, and the common name of the mushroom species,
- (2) That the mushroom was identified while in the fresh state,
- (3) The name of the person who identified the mushroom,
- (4) A statement as to the qualifications and training of the identifier, specifically related to mushroom identification.

Additional information can be found on the California Poison Control web site:

<http://www.calpoison.org/public/mushrooms.html>.

Refer also to the public health reason for sections 139 and 142.

410 IAC 7-24-165 Game animals

The primary concern regarding game animals relates to animals obtained in the wild. Game animals may be available as a source of food only if a regulatory inspection program at least equivalent to IC 15-2.1-24(now IC 15-17-5) is in place to ensure that the game animal products are safe. This is important because game animals may be carriers of viruses, rickettsiae, bacteria, or parasites that cause illness (zoonoses) in humans. Some of these diseases can be severe in the human host. In addition to the risk posed to consumers of game that is not subject to an inspection program, there is risk to those who harvest and prepare game animal products because they may contract infectious diseases, such as rabies or tularemia.

410 IAC 7-24-166 Specifications for receiving temperatures of food

Temperature is one of the prime factors that controls the growth of bacteria in food. Many, though not all, types of pathogens and spoilage bacteria are prevented from multiplying to microbiologically significant levels in properly refrigerated foods that are not out of date. USDA published a final rule (63 FR 45663, August 27, 1998 Shell Eggs; Refrigeration and Labeling Requirements) to require that shell eggs packed for consumer use be stored and transported at an ambient temperature not to exceed 45°F.

High temperatures for a long enough time, such as those associated with thorough cooking, kill or inactivate many types of microorganisms. However, cooking does not always destroy the toxins produced in foods by certain bacteria (such as the enterotoxins of *Staphylococcus aureus*). Cooking or hot holding that follows temperature abuse may not make the food safe. Keeping cooked foods hot as required in the Rule prevents significant regrowth of heat-injured microorganisms and prevents recontamination with bacteria that are newly introduced.

410 IAC 7-24-167 Food additives

It is imperative for safety that food supplies come from sources that are in compliance with laws regarding chemical additives and contaminants.

Food additives are substances which, by their intended use, become components of food, either directly or indirectly. They must be strictly regulated. In excessive amounts or as a result of unapproved application, additives may be harmful to the consumer. Unintentional contaminants or residues also find their way into the food supply. The tolerances or safe limits designated for these chemicals are determined by risk assessment evaluations based on toxicity studies and consumption estimates.

Food and Color additives must be used in compliance with a federal food, or color additive regulation, an effective food-contact notification, or a threshold of regulation exemption. Such regulations, notifications, and exemptions are generally composed of three parts: the identity of the substance, specifications including purity or physical properties, and limitations on the conditions of use. In order for a food, or color additive use to be in compliance, the use must comply with all three criteria.

Federal Food Additive regulations are found in Title 21 CFR, Parts 172-180. Color additive regulations are found in Title 21 CFR Parts 73-Subpart A, 74-Subpart A, 81 and 82. Effective food-contact notifications are listed at <http://vm.cfsan.fda.gov/~dms/opafcn.html>, and threshold of regulation exemptions are listed at <http://www.cfsan.fda.gov/~dms/opa-torx.html>.

Other substances that are added to food include those prior sanctioned for use in food by either the FDA or USDA, or those generally recognized as safe for their intended use in food. Some of these are listed in Title 21 CFR Parts 181-186, Title 9 CFR Section 424.21(b) and at <http://www.cfsan.fda.gov/~rdb/opa-gras.html>. Tolerances and exemptions from tolerance for pesticide chemical residues in or on food are found in Title 40 CFR Part 180. Substances that are prohibited from use in human food are listed in Title 21 CFR Part 189.

410 IAC 7-24-168 Protection from unapproved food or color additives

Refer to the public health reason for section 167

Use of unapproved additives, or the use of approved additives in amounts exceeding those allowed by food additive regulations could result in foodborne illness, including allergic reactions. For example, many adverse reactions have occurred because of the indiscriminate use of sulfites to retard "browning" of fruits and vegetables or to cause ground meat to look "redder" or fresher.

The concern for misuse of additives also applies to retail food establishments operating under a variance and which addresses the use of sodium nitrite or other curing agents in smoking and curing operations. However, if this process is done incorrectly, it could cause illness or death because of excessive nitrite or because the food is insufficiently preserved.

410 IAC 7-24-169 Ice

Freezing does not invariably kill microorganisms; on the contrary, it may preserve them. Therefore, ice that comes into contact with food to cool it or that is used directly for consumption must be as safe as drinking water that is periodically tested and approved for consumption.

410 IAC 7-24-170 Ice used as exterior coolant; prohibited as ingredient

Ice that has been in contact with unsanitized surfaces or raw animal foods may contain pathogens and other contaminants. For example, ice used to store or display fish or packaged foods could become contaminated with microbes present on the fish or packaging. If this ice is then used as a food ingredient, it could contaminate the final product.

410 IAC 7-24-171 Preventing contamination from hands

Refer also to the public health reasons for sections 128, 129, and 132.

In November 1999, the National Advisory Committee for Microbiological Criteria for Foods (NACMCF) concluded that bare hand contact with RTE foods can contribute to the transmission of foodborne illness and agreed that the transmission could be interrupted. The NACMCF recommended exclusion/restriction of ill food workers as the first preventative strategy and recognized that this intervention has limitations, such as trying to identify and manage asymptomatic food workers.

The three interdependent critical factors in reducing foodborne illness transmitted through the fecal-oral route, identified by the NACMCF, include exclusion/restriction of ill food workers; proper handwashing; and no bare hand contact with RTE foods. Each of these factors is inadequate when utilized independently and may not be effective. However, when all three factors are combined and utilized properly, the transmission of fecal-oral pathogens can be controlled. Depending on the microbial contamination level on the hands, handwashing with plain soap and water, as specified in the Rule, may not be an adequate intervention to prevent the transmission of pathogenic microbes to RTE foods via hand contact with RTE foods.

Handwashing as specified in the Rule will reduce microbial contamination of the hands by 2-3 logs.

Food employees and conditional employees infected with fecal-oral pathogens can shed viral and protozoan pathogens in the feces at levels up to 10⁸ viral particles or oocysts per gram of feces. Having a high potential contamination level on the hands combined with a very low infectious dose necessary to cause infection are the reasons that FDA believes that handwashing alone is not an effective single barrier in the transmission of these fecal-oral pathogens. The infective dose for *Giardia* and *Cryptosporidium* is believed to be as low as 1-10 oocysts, and as few as 10 virus particles can infect an individual with Norovirus or hepatitis A.

The CDC now estimates that Norovirus is the leading cause of foodborne illness in the United States. Contaminated hands are a significant factor in the transmission of enteric viruses, including Norovirus and hepatitis A virus. Further, contamination of food by an infected food worker is the most common mode of transmission of hepatitis A in foodborne disease outbreaks. Research has shown the viral transfer rate from contaminated hands to RTE food to be about 10% and that proper handwashing will significantly reduce the chance of transmitting pathogenic viruses. However, with heavy initial contamination of the hands, especially in the subungual space of the fingers, a basic 2-3 log reduction handwashing procedure may not be adequate to prevent the transmission of viral foodborne illness.

Even though bare hands should never contact exposed, RTE food, thorough handwashing is important in keeping gloves or other utensils from becoming vehicles for transferring microbes to the food.

Infected food employees are the source of contamination in approximately one in five foodborne disease outbreaks reported in the United States with a bacterial or viral cause.¹ Most of these outbreaks involve enteric, i.e., fecal-oral agents. These are organisms that employees were shedding in their stools at the time the food was prepared. Because of poor or nonexistent handwashing procedures, workers spread these organisms to the food. In addition, infected cuts, burns, or boils on hands can also result in contamination of food. Viral, bacterial, and parasitic agents can be involved.

¹Based on CDC Summary Surveillance for Foodborne-Disease Outbreaks – United States, 1988-1992 and New York State Department of Health data 1980-1991 published: Weingold, Guzewich, Fudala, 1994, Use of Foodborne Disease Data for HACCP Risk Assessment. J. Food Prot. 53: 820-830

Traditionally, food regulations have required two methods of preventing the spread of foodborne disease by this mode of transfer, i.e., they have prohibited food workers from preparing food when they are infectious and have required thorough and frequent handwashing. In order to strengthen fecal-oral transmission interventions, the Rule provides focused and specific guidance about ill workers and when handwashing must occur. As a final barrier, bare-hand contact with RTE food (i.e., food that is edible without washing or is not subsequently subjected to a pathogen kill step) is prohibited and suitable utensils, such as spatulas, tongs, single-use gloves, or dispensing equipment are required to be used. Any alternative to this requirement must convincingly address how food employees will be managed to preclude food contamination and how management will ensure that thorough handwashing occurs after employees use the toilet.

Because highly susceptible populations include persons who are immunocompromised, the very young and elderly, establishments serving these populations may not use alternatives to the “no bare hand contact with RTE food” requirement.

Bare hand contact is allowed under section 175 for the following: washing fruits and vegetables, shucking oysters and clams deveining shrimp and other crustaceans, applying a garnish, or when otherwise approved through a variance, otherwise food employees shall not contact exposed, RTE food with hands that have not been washed as specified in sections 129 and 130 of this rule and shall use suitable utensils.

Acceptability of an alternative procedure to no bare hand contact requires prior approval from the ISDH based on the retail food establishment having a written employee health policy that details how the establishment complies with management of ill employees as specified under sections 120 through 122 and management of handwashing practices as specified in sections 128-135 of the Rule. The approval should also be based on evidence provided through written procedures and documentation that at least all of the following are addressed:

(A) Personal Cleanliness, i.e., handwashing procedures, including frequency and methodology of handwashing that ensure food employees keep their hands and fingertips clean and handwashing occurs at the times specified in section 129, including after using the toilet and between tasks that may recontaminate the hands.

(B) Hygienic Practices as specified in sections 136, 137, 138, and 435.

(C) Employee Health regarding:

(1) Reporting of diseases and medical conditions, and

(2) Exclusions and restrictions, i.e., that food employees and conditional employees report their health status as specified in section 120, ill food employees are restricted or excluded as specified in sections 121; and the exclusions and restrictions are removed as specified in section 122;

(D) How the alternative practices and procedures will control the hazard through an active managerial control program. Such a program includes monitoring and verifying the institution of the provisions described in paragraphs A-C above and satisfies the following:

(1) The public health hazard associated with bare hand contact specific to the retail food establishment operation is identified and understood. The regulatory authority needs assurance that the permit holder recognizes that the hazard being addressed is the possible contamination of RTE food by viral and parasitic as well as bacterial pathogens that are transferred from employees' hands.

(2) The RTE foods that will be contacted with bare hands are identified and both procedures and practices are in place so that food employees wash their hands before returning to their work station and cross-contamination from touching raw and RTE food is precluded. For example, identifying the specific type of food to be prepared, such as tacos, and the specific location, such as a situation where a food employee is assigned solely to the designated taco work station. The work station is located immediately adjacent to the taco assembly unit and the employee will be preparing only the specified RTE food using bare hands. Another example could be a food employee who is responsible solely for assembling a variety of RTE foods.

(3) Institution of an effective training program for food employees that emphasizes not working when ill with any of the gastrointestinal symptoms listed in the Code, and explains good hygienic practices, proper handwashing procedures, and safe food preparation procedures. This should include a documented training plan that specifies how management responsibility for training has been designated, training program content, and the frequency of administration including periodic refresher sessions.

(E) The alternative procedure should clearly describe monitoring, documentation, and verification actions to ensure that the practices and procedures are followed. Corrective actions need to be predetermined for situations where the practices and procedures are not followed, e.g., an ill employee is found preparing foods.

(F) Documentation of the practices, procedures, and corrective actions related to an alternative to no bare hand contact with RTE food must be maintained and readily available at the retail food establishment at all times for use by the PIC and for review by the regulatory authority.

410 IAC 7-24-173 Packaged and unpackaged food; separation, packaging, and segregation

With regard to the storage of raw animal foods as specified under section 173 (a)(2), it is the intent of the Rule to require separation based on anticipated microbial load and raw animal food type (species). Raw animal foods shall be separated based on a succession of cooking temperatures since cooking temperatures as specified under section 182 are based on thermal destruction data and anticipated microbial load. For example, to prevent cross-contamination, fish and certain cuts of pork, which are required to be cooked to an internal temperature of 145°F for 15 seconds, shall be stored above or away from raw poultry, which is required to be cooked to an internal temperature of 165°F for 15 seconds due to its considerably higher anticipated microbial load. In addition, raw animal foods having the same cooking temperature, such as pork and fish, shall be separated from one another during storage and preparation by maintaining adequate spacing or by placing the food in separate containers because of the potential for allergen cross-contamination or economic adulteration via inadvertent species substitution.

Food that is inadequately packaged or contained in damaged packaging could become contaminated by microbes, dust, or chemicals introduced by products or equipment stored in close proximity or by persons delivering, stocking, or opening packages or overwraps. Packaging must be appropriate for preventing the entry of microbes and other contaminants, such as chemicals. These contaminants may be present on the outside of containers and may contaminate food if the packaging is inadequate or damaged, or when the packaging is opened. The removal of food product overwraps may also damage the package integrity of foods under the overwraps if proper care is not taken.

410 IAC 7-24-174 Food storage containers; identified with common name of food

Certain foods may be difficult to identify after they are removed from their original packaging. Consumers may be allergic to certain foods or ingredients. The mistaken use of an ingredient, when the consumer has specifically requested that it not be used, may result in severe medical consequences.

The mistaken use of food from unlabeled containers could result in chemical poisoning. For example, foodborne illness and death have resulted from the use of unlabeled salt, instead of sugar, in infant formula and special dietary foods. Liquid foods, such as oils, and granular foods that may resemble cleaning compounds are also of particular concern.

410 IAC 7-24-175 Washing fruits and vegetables

Pathogenic organisms and chemicals may be present on the exterior surfaces of raw fruits and vegetables. Washing removes the majority of organisms and/or chemicals present. If nondrinking water is used, the fruits and vegetables could become contaminated.

Toxic or undesirable residues could be present in or on the food if chemicals used for washing purposes are unapproved or applied in excessive concentrations.

On October 26, 1998 a voluntary guidance document which addresses practices commonly used by fresh fruit and vegetable producers was issued jointly by FDA, USDA, and CDC. This voluntary guidance contains useful information related to washing fruits and vegetables as well as the application of antimicrobial agents. The “Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables” is available from FDA’s Food Safety Initiative staff and also on the Internet at <http://www.foodsafety.gov/~acrobat/prodguid.pdf>

410 IAC 7-24-176 Storage or display of food in contact with water or ice

Packages that are not watertight may allow entry of water that has been exposed to unsanitary exterior surfaces of packaging, causing the food to be contaminated. This may also result in the addition of water to the food that is unclaimed in the food's formulation and label. Unpackaged foods, such as fresh fish are often stored and/or displayed on ice. A potential for increasing the microbial load of a food exists because, as the ice melts, pathogens from one food may be carried by water to other foods. The potential for contamination is reduced by continuous draining of melting ice.

410 IAC 7-24-177 Food storage

410 IAC 7-24-178 Food storage; prohibited areas

Pathogens can contaminate and/or grow in food that is not stored properly. Drips of condensate and drafts of unfiltered air can be sources of microbial contamination for stored food. Shoes carry contamination onto the floors of food preparation and storage areas. Even trace amounts of refuse or wastes in rooms used as toilets or for dressing, storing garbage or implements, or housing machinery can become sources of food contamination. Moist conditions in storage areas promote microbial growth.

410 IAC 7-24-179 Food display

During display, food can be contaminated even when there is no direct hand contact. Many microbes can be conveyed considerable distances on air currents through fine sprays or aerosols. These may originate from people breathing or sneezing, water sprays directed at drains, or condensate from air conditioners. Even wind gusts across sewage deposits and fertilized fields have been known to contaminate food in adjacent establishments where food was unprotected.

410 IAC 7-24-180 Condiments; protection

Unpackaged condiments are exposed to contamination by consumers who could be suffering from a disease transmissible through food. Once the condiments are contaminated, subsequent consumers using the condiments may be exposed to pathogens. Condiments in individual packages are protected from consumer contamination.

On- or off-site facilities for refilling condiment dispensers must be adequately equipped to ensure that the filling operation does not introduce contaminants.

410 IAC 7-24-181 Consumer self-service operations

Raw foods of animal origin usually contain pathogens. In addition, these foods, if offered for consumer self-service, could cross contaminate other foods stored in the same display. Because raw foods of animal origin are assumed to be contaminated and do provide an ideal medium for the growth of pathogenic organisms, they should not be available for consumer self-service. Self-service operations of RTE foods also provide an opportunity for contamination by consumers. The risk of contamination can be reduced by supplying clean utensils and dispensers and by employee monitoring of these operations to ensure that the utensils and dispensers are properly used.

Bean sprouts that are displayed in produce areas for consumer self-service are a PHF and appropriate refrigeration must be maintained. However, they are not considered RTE since they are intended to be washed by the consumer before consumption.

410 IAC 7-24-182 Cooking of raw animal foods

410 IAC 7-24-183 Microwave cooking

410 IAC 7-24-186 Cooking for hot holding

Cooking, to be effective in eliminating pathogens, must be adjusted to a number of factors. These include the anticipated level of pathogenic bacteria in the raw product, the initial temperature of the food, and the food's bulk which affects the time to achieve the needed internal product temperature. Other factors to be considered include post-cooking heat rise and the time the food must be held at a specified internal temperature.

Greater numbers and varieties of pathogens generally are found on poultry than on other raw animal foods. Therefore, a higher temperature, in combination with the appropriate time is needed to cook these products.

To kill microorganisms, food must be held at a sufficient temperature for the specified time. Cooking is a scheduled process in which each of a series of continuous time/temperature combinations can be equally effective. For example, in cooking a beef roast, the microbial lethality achieved at 112 minutes after it has reached 130°F is the same lethality attained as if it were cooked for 4 minutes after it has reached 145°F. Cooked beef and roast beef, including sectioned and formed roasts, chunked and formed roasts, lamb roasts and cooked corned beef can be prepared using one of the time and temperature combinations listed in the chart in section 182 to meet a 6.5-log reduction of *Salmonella*. The stated temperature is the minimum that must be achieved and maintained in all parts of each piece of meat for a least the stated time. The source of the time and temperature parameters is from the USDA/FSIS Appendix A, "Compliance Guidelines for Meeting Lethality Performance Standards For Certain Meat and Poultry Products" found at <http://www.fsis.usda.gov/oa/fr/95033F-a.htm>.

Cooking requirements are based in part on the biology of pathogens. The thermal destruction of a microorganism is determined by its ability to survive heat. Different species of microorganisms have different susceptibilities to heat. Also, the growing stage of a species (such as the vegetative cell of bacteria, the trophozoite of protozoa, or the larval form of worms) is less resistant than the same organism's survival form (the bacterial spore, protozoan cyst, or worm egg).

Food characteristics also affect the lethality of cooking temperatures. Heat penetrates into different foods at different rates. High fat content in food reduces the effective lethality of heat. High humidity within the cooking vessel and the moisture content of food aid thermal destruction.

Heating a large roast too quickly with a high oven temperature may char or dry the outside, creating a layer of insulation that shields the inside from efficient heat penetration. To kill all pathogens in food, cooking must bring all parts of the food up to the required temperatures for the correct length of time.

The temperature and time combination criteria specified in sections 152, 182, 183, 186, and 188 of the Rule are based on the destruction of *Salmonellae*. This organism, if present in raw shell eggs, is generally found in relatively low numbers. Other foods, uncomminuted fish and meats including commercially raised game animal meat, specified as acceptable for cooking at this temperature and time parameter are expected to have a low level of internal contamination. The parameters are expected to provide destruction of the surface contaminants on these foods. Sections 152, 182, 183, 186, and 188 include temperature and time parameters that provide "D" values (decimal log reduction values) that may surpass 7D. For example, at 145°F, a time span of 15 seconds will provide a 3D reduction of *Salmonella enteritidis* in eggs.

The requirements specified under section 182 (d) acknowledge the rights of an informed consumer to order and consume foods as preferred by that consumer based on the consumer's health status and understanding of the risks associated with eating raw or partially-cooked animal foods.

In consumer self-service operations, such as buffets, salad bars, sushi bars, or display cases, the consumer advisory as specified under section 196 must be posted or available at the self-service unit where the raw or partially cooked food is held for service and readily accessible to consumers prior to making their food selections. In a catered situation, such as a wedding reception, guests are responsible for making their own requests or selections.

Slow-cooked roasts - Heating Deviations and Slow Come Up Time

(Source: USDA/FSIS Appendix A, Compliance Guidelines For Meeting Lethality Performance Standards For Certain Meat And Poultry Products) found at <http://www.fsis.usda.gov/oa/fr/95033F-a.htm>

Heating deviations, which most often involve slow come-up time or an inordinate dwell time within the optimum temperature range for microorganism growth can foster the multiplication of many pathogens. This multiplication sometimes can be so prodigious that even re-cooking may be ineffective in rendering the product safe. Also, certain

toxigenic bacteria can release toxins into the product. Some of these toxins, such as those of *Staphylococcus aureus*, are extremely heat stable and are not inactivated by normal re-cooking temperatures.

Further, the sampling of product following a heating deviation may not yield sufficient information to determine the safety of the product in question. Heating deviations can favor the multiplication of many types of bacteria. It would be difficult and expensive to sample for all of them. Depending on the circumstances, establishments may want to use computer modeling to estimate the relative multiplication of bacteria. For example, in a past incident involving an extreme heating deviation, product was put in an oven in which the temperature was inadvertently set to 95°F for about 12 hours. Computer modeling was easily applied in this case because much of the dwell time was at one temperature. The USDA/FSIS determined that within a 6-hour time frame (with other growth conditions assumed to be favorable), the relative multiplication of many pathogens of concern could have exceeded 5-logs. Clearly the product could not be salvaged by reprocessing and was therefore destroyed. Under changing conditions of temperature, however, computer modeling becomes more difficult. One approach is to average lag/log times over small increments, such as 5°F and add these times to get an approximation of possible total relative growth over a larger increment of time. Establishments must keep in mind that the population of bacteria before processing is generally unknown and that assumptions in the high range often are used as input parameters in the modeling.

Seared Steak

The provision for allowing seared steaks was reviewed by the National Advisory Committee for Microbiological Criteria for Foods (NACMCF) and USDA. Section 182 (c) includes their recommendations.

USDA comments included, “For the purposes of this discussion, steak is a whole beef muscle. It does not include whole beef muscle that has been pinned, injected, or chopped and formed. It may be cut cross grain, such as sirloin, chuck, or porterhouse; or it may be cut with the grain, such as flank, skirt, or Chateaubriand. Other species, such as poultry, pork, and lamb are not included.”

NACMCF comments included, “Due to the low probability of pathogenic organisms being present in or migrating from the external surface to the interior of beef muscle, cuts of intact muscle (steaks) should be safe if the external surfaces are exposed to temperatures sufficient to effect a cooked color change. In addition, the cut (exposed) surfaces must receive additional heat to effect a complete sear across the cut surfaces. Grill or char marks may be applied to the complete surface searing. The meat should be seared on both top and bottom surfaces utilizing a heating environment (e.g., grill or broiling oven) that imparts a temperature at the surface of the intact steak of at least 145°F to achieve a cooked color change on all external surfaces. The searing of all surfaces should be continuous until the desired degree of doneness and appearance are attained. This is considered a RTE food.”

As reflected in the definition of a whole-muscle, intact beef steak, marination is a food safety concern when the fascia (exterior surface) of the steak is broken by scoring or other means which allows the marinade to penetrate, and potentially contaminate, the interior of the steak. In such cases, the Rule allowance for undercooking without a consumer advisory is negated.

Pork

In pork, *Trichinella spiralis*, *Toxoplasma gondii*, and *Taenia solium*, parasites causing foodborne illness, are inactivated at temperatures below 145°F. Therefore, pork roasts can be cooked like beef roasts (e.g., 145°F for 3 minutes) and pork chops cooked like steaks to achieve an internal temperature of 145°F for 15 seconds.

Based on the Goodfellow and Brown study, a 5D reduction of organisms is achieved at 155°F for 15 seconds for the following foods: ratites and injected meats and comminuted fish meat, game animals commercially raised for food, and game animals that come under a USDA voluntary inspection program. Ratites, such as ostrich, emu, and rhea are included in this list of raw animals' foods because when cooked to a temperature greater than 155°F, ratites exhibit an (metallic) "off" taste.

When USDA established the time and temperature parameters for 9 CFR 318.23 Heat-Processing and Stabilization Requirements for Uncured Meat Patties (known as the "patty rule"), the Agency based the 5D for *Salmonella* on

extrapolations applied to the research done by Goodfellow and Brown to account for the lack of a "come up, come down" time in the thin, small mass beef patties.

Consequently, there is no linear relationship between the patty rule and roast beef time and temperature parameters. The patty rule also provided for an 8D reduction in the number of Shiga toxin-producing *Escherichia coli*. The time and temperature requirements in the Rule for comminuted meats are comparable to the USDA requirements.

Temperature for Comminuted Meat at Less Than 1 Second

In the "Report of the Task Force on Technical Issues Arising from the National Advisory Committee for Microbiological Criteria for Foods (NACMCF) Review of the Meat Patty Proposal" (undated), it is stated on page 7, in Option (A), that:

"Based on the 1998 research data ... and an assumption that instantaneous is defined as eight seconds, manufacturers would be required to process fully-cooked meat patties at a temperature of 157°F. Given the lack of any significant margin of safety in this process, there should be no deviation below the 158°F requirement."

In November, 1997, the NACMCF Meat and Poultry Subcommittee revisited the time and temperatures for cooking hamburger and advised FDA that cooking hamburger to 158°F for less than one second is an adequate cook based on the following:

1. The cooking recommendations contained in the Rule and in USDA guidance provide a large margin of safety for killing vegetative enteric pathogens;
2. The concept of integrated lethality (the kill imparted during the entire heating and cooling process) adds to the margin of safety; and
3. The time component of the time and temperature requirement will be exceeded before the temperature can be determined.

The parameters for cooking poultry, wild game animal meats, stuffed food products, etc., of 165°F or above for 15 seconds yield greater than a 7D reduction.

410 IAC 7-24-183 Microwave cooking

The rapid increase in food temperature resulting from microwave heating does not provide the same cumulative time and temperature relationship necessary for the destruction of microorganisms as do conventional cooking methods. In order to achieve comparable lethality, the food must attain a temperature of 165°F in all parts of the food. Since cold spots may exist in food cooking in a microwave oven, it is critical to measure the food temperature at multiple sites when the food is removed from the oven and then allow the food to stand covered for two minutes post microwave heating to allow thermal equalization and exposure. Although some microwave ovens are designed and engineered to deliver energy more evenly to the food than others, the important factor is to measure and ensure that the final temperature reaches 165°F throughout the food.

"¹The factors that influence microwave thermal processes include many of the same factors that are important in conventional processes (mass of objects, shape of objects, specific heat and thermal conductivity, etc.). However, other factors are unique in affecting microwave heating, due to the nature of the electric field involved in causing molecular friction. These factors are exemplified by moisture and salt contents of foods, which play a far more important role in microwave than conventional heating."

¹Heddleson, RA, and S. Doores, 1993. Factors affecting Microwave Heating of Foods and Microwave Induced Destruction of Food Pathogens – A Review. J. Food Prot. 57(11) 1025-1037.

410 IAC 7-24-184 Microwave ovens

Failure of microwave ovens to meet the CFR standards could result in human exposure to radiation leakage, resulting in possible medical problems to consumers and employees using the machines.

410 IAC 7-24-186 Cooking for hot holding

Fruits and vegetables that are fresh, frozen, or canned and that are heated for hot holding need only to be cooked to the temperature required for hot holding. These foods do not require the same level of microorganism destruction as do raw animal foods since these fruits and vegetables are RTE at any temperature. Cooking to the hot holding temperature of 135°F prevents the growth of pathogenic bacteria that may be present in or on these foods. In fact, the level of bacteria will be reduced over time at the specified hot holding temperature.

410 IAC 7-24-187 Potentially hazardous food, hot and cold holding

Bacterial growth and/or toxin production can occur if PHF remains in the temperature "Danger Zone" of 41°F to 135°F too long. Up to a point, the rate of growth increases with an increase in temperature within this zone. Beyond the upper limit of the optimal temperature range for a particular organism, the rate of growth decreases. Operations requiring heating or cooling of food should be performed as rapidly as possible to avoid the possibility of bacterial growth.

Cold Holding

Maintaining PHF foods under the cold temperature control requirements prescribed in the Rule will limit the growth of pathogens that may be present in or on the food and may help prevent foodborne illness. All microorganisms have a defined temperature range in which they grow, with a minimum, maximum, and optimum. An understanding of the interplay between time, temperature, and other intrinsic and extrinsic factors is crucial to selecting the proper storage conditions for a food product. Temperature has dramatic impact on both the generation time of an organism and its lag period. When considering growth rate of microbial pathogens, time and temperature are integral and must be considered together. Increases in storage and/or display temperature will decrease the shelf life of refrigerated foods since the higher the temperature, the more permissive conditions are for growth.

Except for raw shell eggs, control of the growth of *Listeria monocytogenes* (Lm) is the basis for the list of cold holding temperature and time combinations in section 191. The list addresses time, in addition to temperature, as a control for the growth of Lm in refrigerated, RTE, PHF. The Rule provisions for cold holding focus on environmental conditions that allow 1 log of growth of Lm, and do not set an acceptable number of Lm in food. Neither do they imply that Lm is in the product.

The times and temperatures in the 1999 FDA Model Food Code were based on the USDA Pathogen Modeling Program (PMP), which is conservative in estimating how soon Lm begins to grow and how fast. The PMP was based largely on observations of microbial growth in broth cultures, but some observations in specific foods were also included. The PMP allows for some variation in temperature, pH, and water activity, and gives a conservative estimate of safe times and temperatures for holding foods. The 1999 FDA Model Food Code estimated safe times and temperatures that would allow 3 logs of growth, based on the PMP.

During 2000, CFSAN researched published literature and compiled a listing of the growth potential of Lm in various food commodities using real food data. Based on this information, the 1999 FDA Model Food Code times and temperatures of 41°F for 7 days and 45°F for 4 days were validated, but the underlying performance standard changed for the commodities studied. The research-based, food-specific times and temperatures allow no more than 1 log of growth instead of the 3 log growth predicted in the PMP. This more stringent performance standard of 1 log is consistent with the USDA/FSIS performance standard and the fact that the infectious dose of Lm remains unknown.

FDA concluded that the 1999 Model Food Code time/temperature criteria hold true and provide both a greater level of safety and a more realistic basis for regulatory requirements without compromising public health protection.

In October 2003, FDA, in cooperation with the USDA/FSIS and CDC, released the Quantitative Assessment of the Relative Risk to Public Health from Foodborne *Listeria monocytogenes* Among Selected Categories of RTE Foods (risk assessment). This initiative included the development of 23 separate risk assessments and analysis of the relative risks of serious illness and death associated with consumption of 23 categories of RTE foods. These categories included: seafood, produce, meats, dairy products, and deli salads

The risk assessment identified several broad factors that affect consumer exposure to Lm at the time of food consumption. Two of these factors, refrigerated storage temperature and duration of refrigerated storage before consumption, have a direct bearing on cold holding time/temperature combinations used in retail food establishments.

FDA continues to have concerns about the potential for growth of Lm in refrigerated, RTE, PHF, prepared and packaged in a food processing plant and held in a retail food establishment. Data from the risk assessment (Table 1 below) show a significant reduction in the projected cases of listeriosis when refrigerated storage is limited to 41°F. Based on these data and conclusions from the risk assessment, FDA continues to recommend that retail food establishments limit the cold storage of potentially hazardous, RTE foods to a maximum temperature of 41°F.

Table 1. Estimated Reduction of Cases of Listeriosis from Limits on Refrigeration Temperatures

Maximum Refrigerator Temperature	Cases of Listeriosis ^a		
	Median	55 th Percentile	95 th Percentile
Baseline ^b	2105	3/4 ^c	3/4 ^c
45°F maximum	656	331	761
41°F maximum	28	1	126

^aValues for the median, upper and lower uncertainty levels.

^bThe baseline uses the full empirical distribution of refrigerator temperatures from the Audits International (1999) survey.

^cThe baseline number of cases of listeriosis is fixed based on CDC surveillance data.

*The scenario assumed the distribution of storage times is the same for all three temperature sets.

Source: Quantitative Assessment of the Relative Risk to Public Health from Foodborne *Listeria monocytogenes* Among Selected Categories of Ready-to-Eat Foods September 2003. Table VI-1. Estimated Reduction of Cases of Listeriosis from Limits on Refrigeration Temperatures.

Regarding shell eggs, USDA published a final rule (63 FR 45663, August 27, 1998 Refrigeration and Labeling Requirements for Shell Eggs) to require that shell eggs packed for consumer use be stored and transported at an ambient temperature not to exceed 45°F. This regulation, however, does not apply to eggs while held at all retail establishments. FDA is concerned that without continued refrigeration up until the time that the eggs are cooked, there would be an opportunity for the egg's defenses to degrade and growth of *Salmonella enteritidis* to occur. The agency reviewed research indicating that *Salmonella enteritidis* multiplies at temperatures of 50°F and above but can be inhibited at lower temperatures, e.g., 46°F, 45°F, and 39°F. Based on this research and USDA's temperature requirement during transport, FDA implemented regulations that establish a maximum ambient air temperature of 45°F for eggs stored and displayed at retail establishments, amended Federal regulations 21 CFR Part 115.50 issued on December 5, 2000 and became effective on June 4, 2001.

Although Congress did not expressly preempt State law in this area, FDA found preemption is needed because State and local laws that are less stringent than the Federal requirements will not support the important public health goals of these regulations. FDA does not believe that preemption of State and local refrigeration and labeling requirements that are the same as or more stringent than the requirements of these regulations is necessary, as enforcement of such State and local requirements will support the food safety goals of these regulations. Accordingly, the preemptive effect of this rule is limited to State or local requirements that are not as stringent as the requirements of these regulations; requirements that are the same as or more stringent than FDA's requirements remain in effect.

Historical Record of Cold Holding Temperature Provisions

The 1976 Food Service Sanitation Manual recommended 45°F as the cold holding temperature. Based on the available science at the time, the 1993 Food Code lowered the cold holding temperature to 41°F.

However, stakeholders raised concerns that many of the refrigerators currently in place in food establishments would not be capable of maintaining food at that temperature. There was also concern that most of the open-top buffet and food prep table-type units being built at the time could not reliably maintain food at 41°F or less. Industry pointed out

that operators needed to recover investments in new refrigeration equipment purchased just before or after a state adopted the 41°F provision.

Consequently, the CFP recommended the 1997 Food Code incorporate the option of having a 5-year phase-in period for the 41°F requirement to allow for upgrading of existing equipment, and the FDA agreed.

By 2006, many states adopted and implemented the phase-in period, the 5 years had expired and they were requiring cold holding at 41°F or less. In addition, NSF/ANSI Standard 7 was revised in 1997 and again in 1999 to ensure that equipment conforming to the Standard, including open-top and display units, could achieve the desired performance under conditions typically found in the food service and retail environments. Thus, there are mechanisms in place to allow industry flexibility in holding foods out of temperature control and the exemption for holding at 45°F was no longer necessary, given equipment capabilities, existing provisions of the Food Code that could be utilized (e.g., variances, time as a public health control), and the impact on public health. Additionally, the FDA believed this exemption was no longer necessary and perhaps was detrimental to public health protection in light of what had been learned about the growth and survival of *Listeria monocytogenes* (*LM*) in refrigerated foods.

In 2006, the CFP recommended (CFP Issue 2006-I-033) and FDA agreed that the option of maintaining 45°F as a cold holding temperature be deleted from § 3-501.16. In the Supplement to the 2005 Food Code, the option to maintain 45°F as the cold holding temperature was deleted from the Food Code and 41°F became the standard for cold holding. In Indiana, the phase-in period concludes April 29, 2010 (see section 187 of the Rule).

Hot Holding

In a January 2001 report, the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) recommended that the minimum hot holding temperature specified in the Rule:

- Be greater than the upper limit of the range of temperatures at which *Clostridium perfringens* and *Bacillus cereus* may grow; and
- Provide a margin of safety that accounts for variations in food matrices, variations in temperature throughout a food product, and the capability of hot holding equipment to consistently maintain product at a desired target temperature.

C. perfringens has been reported to grow at temperatures up to 126°F. Growth at this upper limit requires anaerobic conditions and follows a lag phase of at least several hours. The literature shows that lag phase duration and generation times are shorter at incubation temperatures below 120°F than at 125°F. Studies also suggest that temperatures that preclude the growth of *C. perfringens* also preclude the growth of *B. cereus*.

CDC estimates that approximately 250,000 foodborne illness cases can be attributed to *C. perfringens* and *B. cereus* each year in the United States. These spore-forming pathogens have been implicated in foodborne illness outbreaks associated with foods held at improper temperatures. This suggests that preventing the growth of these organisms in food by maintaining adequate hot holding temperatures is an important public health intervention.

Taking into consideration the recommendations of NACMCF and the 2002 CFP meeting, FDA believes that maintaining food at a temperature of 135°F or greater during hot holding is sufficient to prevent the growth of pathogens and is therefore an effective measure in the prevention of foodborne illness.

410 IAC 7-24-188 Reheating for hot holding

Refer also to the public health reasons for section 183

When food is held, cooled, and reheated in a retail food establishment, there is an increased risk from contamination caused by personnel, equipment, procedures, or other factors. If food is held at improper temperatures for enough time, pathogens have the opportunity to multiply to dangerous numbers. Proper reheating provides a major degree of assurance that pathogens will be eliminated. It is especially effective in reducing the numbers of *Clostridium*

perfringens that may grow in meat, poultry, or gravy if these products were improperly cooled. Vegetative cells of *C. perfringens* can cause foodborne illness when they grow to high numbers. Highly resistant *C. perfringens* spores will survive cooking and hot holding. If food is abused by being held at improper holding temperatures or improperly cooled, spores can germinate to become rapidly multiplying vegetative cells. Although proper reheating will kill most organisms of concern, some toxins, such as which produced by *Staphylococcus aureus*, cannot be inactivated through reheating of the food. It is imperative that food contamination be minimized to avoid this risk.

The potential for growth of pathogenic bacteria is greater in reheated cooked foods than in raw foods. This is because spoilage bacteria, which inhibit the growth of pathogens by competition on raw product, are killed during cooking. Subsequent recontamination will allow pathogens to grow without competition if temperature abuse occurs.

410 IAC 7-24-189 Potentially hazardous food; cooling

Safe cooling requires removing heat from food quickly enough to prevent microbial growth. Excessive time for cooling of PHF has been consistently identified as one of the leading contributing factors to foodborne illness. During slow cooling, PHF is subject to the growth of a variety of pathogenic microorganisms. A longer time near ideal bacterial incubation temperatures, 70°F - 125°F, is to be avoided. If the food is not cooled in accordance with the Rule requirements, pathogens may grow to sufficient numbers to cause foodborne illness.

The Rule provision for cooling provides for cooling from 135°F to 41°F or 45°F in 6 hours, with cooling from 135°F to 70°F in 2 hours. The 6-hour cooling parameter, with an initial 2-hour rapid cool, allows for greater flexibility in meeting the Rule. The initial 2-hour cool is a critical element of this cooling process. An example of proper cooling might involve cooling from 135°F to 70°F in 1 hour, in which case 5 hours remain for cooling from 70°F to 41°F or 45°F. Conversely, if cooling from 135°F to 41°F or 45°F is achieved in 6 hours, but the initial cooling to 70°F took 3 hours, the food safety hazards may not be adequately controlled.

If the cooking step prior to cooling is adequate and no recontamination occurs, all but the spore-forming organisms, such as *Clostridium perfringens* or *Bacillus cereus* should be killed or inactivated. However, under substandard sanitary conditions, other pathogens, such as *Salmonella* or *Listeria monocytogenes* may be reintroduced. Thus, cooling requirements are based on growth characteristics of organisms that may survive or be a post-cook contaminate and grow rapidly under temperature abuse conditions.

Shell Eggs

FDA has approved the use of ionizing radiation for shell eggs. This approval means that FDA has not found the ionizing radiation process to be unsafe for shell eggs. However, shell eggs that have been subjected to the approved ionizing radiation process are not considered to have been pasteurized. Shell egg pasteurization requires the egg to have been subjected to a 5-log kill process for *Salmonella enteritidis*, while the approved ionizing radiation process may deliver only 2 or 3 logs reduction. Therefore, eggs treated by ionizing radiation process alone must be held under refrigeration, as it cannot be guaranteed that *Salmonella enteritidis* will be eliminated in all treated eggs. Further, irradiated eggs must be labeled in accordance with 21 CFR 179.26 Ionizing radiation for the treatment of food.

Hard-boiled eggs with shell intact may be cooled in ambient air and are not considered to be a PHF after cooling. Hard-boiled eggs may be cooled in drinking water but are considered to be a PHF after cooling because pathogens, which may be present in the water, may pass through the egg shell during cooling.

Salmonella enteritidis has been shown to have an extended lag phase in shell eggs due to inhibitory characteristics of the albumen. Research indicates that the organisms are physically located near the exterior of the yolk membrane, in contact with the bacteriostatic components. Growth does not appear until the yolk membrane is weakened by age or physically breached and the yolk nutrients, such as iron, become available to the organisms.

Federal regulations effective August 27, 1999, require shell eggs to be transported and distributed under refrigeration at an ambient temperature not to exceed 45°F. Packed shell eggs must be labeled indicating that refrigeration is required. Imported shell eggs packed for consumer use are required to include a certification that the eggs, at all times after packing, have been stored and transported at an ambient temperature of no greater than 45°F.

On December 5, 2000 federal regulations were amended to require that shell egg cartons bear safe handling instructions and be placed under refrigeration at 45°F or lower upon delivery at retail establishments (65 FR 76091, December 5, 2000, Food Labeling, Safe Handling Statements, Labeling of Shell Eggs; Refrigeration of Shell Eggs Held for Retail Distribution). The amended provisions include:

- 21 CFR Part 16 Regulatory Hearing before the Food and Drug Administration, § 16.5 Inapplicability and limited applicability, (4) A hearing on an order for relabeling, diversion or destruction of shell eggs...
- 21 CFR Part 101 Food Labeling § 101.17 Food labeling warning, notice, and safe handling statements, (h) Shell eggs.
- 21 CFR Part 115 Shell Eggs, § 115.50 Refrigeration of shell eggs held for retail distribution.

Shell eggs must be placed immediately after receipt in refrigerated equipment that is capable of maintaining an ambient air temperature of 45°F. With the newly established Federal requirement for eggs to be in an ambient storage and transportation temperature of 45°F, and with refrigeration of eggs at retail as described above, the overall time that eggs are stored at temperatures that allow the growth of *Salmonella* spp. should be shortened. Additionally, this requirement negates the need to "cool" shell eggs upon receipt, although retail food establishment operators should maximize the circulation of cooled air in refrigeration units by separating flats, cases, and multiple cartons of eggs.

CFSAN/FSIS Joint Position Paper on Cooling

The processing of most RTE products includes a heat treatment or cooking step to eliminate pathogenic and spoilage microorganisms. However, this heat treatment does not eliminate spores of *Clostridium botulinum* and *Clostridium perfringens* and other spore-forming bacteria. Furthermore, these organisms can thrive in the warm product since other competing organisms have been eliminated. Non-refrigerated, anaerobic conditions are conducive to their growth and multiplication.

To prevent the growth and multiplication of spore-forming organisms, product should be cooled rapidly after cooking. When there is inadequate cooling, spores can germinate and the resulting vegetative cells can multiply to hazardous levels. The presence of sufficient numbers of *C. botulinum* or other spore-forming organisms may lead to production of harmful toxins. Therefore, ensuring no growth of these organisms will provide the greatest amount of safety.

The USDA/FSIS Performance Standards for the Production of Certain Meat and Poultry Products require a stabilization step (cooling) after the lethality step. The stabilization requirements allow for no growth of *C. botulinum* and no more than 1 log growth of *C. perfringens*. The performance standard of no more than 1 log growth of *C. perfringens* was based on the following reasons:

1. The Centers for Disease Control and Prevention (CDC) suggested viable counts of 10^5 or greater of *C. perfringens* per gram as one of the criteria for incriminating *C. perfringens* as a causative agent of foodborne illness in finished product. However, foods responsible for *C. perfringens* outbreaks were found usually to contain 10^6 vegetative *C. perfringens* cells per gram. In FSIS microbiological raw product surveys, samples were found to contain more than 1000 *C. perfringens* per gram. There is some probability that greater than 10^4 *C. perfringens* per gram can occur in the raw product on rare occasions. It is a conservative assumption that the great majority of *C. perfringens* in the raw product are spores.
2. Heating activates spores that, during cooling, become vegetative cells that can multiply to hazardous levels. If there are more than 10^4 *C. perfringens* (spores) per gram on raw product, it is possible that there may be more than 10^4 vegetative *C. perfringens* per gram in the product if it is improperly cooled after cooking.
3. Based on the CDC recommended upper limit of 10^5 which should not be exceeded, it was determined that a limit of no more than 1 log growth of *C. perfringens* would be appropriate to ensure that there would be no more than 10^5 *C. perfringens* per gram on the finished product after cooling.
4. The performance standard was discussed with experts on clostridia research. The experts agreed that limiting the relative growth of *C. perfringens* to no more than 1 log would be reasonable and somewhat conservative

with respect to product safety. (64 FR 732, January 6, 1999, Performance Standards for the Production of Certain Meat and Meat Products).

The FSIS compliance guideline for the cooling performance standards, which can be found at <http://www.fsis.usda.gov/oa/fr/95033F-b.htm> “Compliance Guidelines for Cooling Heat-Treated Meat and Poultry Products (Stabilization)”, is that product must be cooled from 130°F to 80°F in 1.5 hours and from 80°F to 40°F in 5 hours. This cooling rate can be applied universally to cooked products like partially cooked or fully cooked, intact or non-intact meat and poultry products. The guideline results in continuous and rapid cooling of the product in the temperature range where the spore-forming organisms can grow rapidly.

The former USDA guideline of cooling from 120°F to 55°F in no more than 6 hours is also included in the new compliance guidelines. In using this guideline, chilling should begin within 90 minutes after the cooking cycle is completed, and cooling should continue until product reaches 40°F. The 6-hour rule begins when the product reaches 120°F, and product should not be shipped until the product reaches 40°F. This older cooling guideline results in a significantly smaller margin of safety, especially if the product is non-intact. In using this older guideline, the establishment has to ensure that cooling is as rapid as possible, especially between 120°F and 80°F, and should monitor the cooling closely to prevent any deviation. If product remains between these temperatures for more than an hour, compliance with the performance standard is less certain.

The FSIS cooling guideline for meat and poultry products containing 100 ppm added nitrite is 130°F to 80°F in 5 hours and from 80°F to 45°F in 10 hours, a total of 15 hours cooling time. This cooling process provides a narrow margin of safety. In case of cooling deviations, the establishment should assume that their process has exceeded the performance standard for controlling the growth of *C. perfringens*, and should take corrective action. However, the presence of nitrite should ensure compliance with the performance standard for *C. botulinum*.

The Rule provision for cooling is similar, though not identical to the FSIS cooling compliance guidelines. It provides for cooling from 135°F to 70°F in 2 hours and from 135°F to 41°F or 45°F in 6 hours and is based on the same food safety concerns as FSIS’ guidance. The Rule provides prescriptive cooling time/temperature combinations without a HACCP plan in place. Federally inspected meat and poultry establishments are required to implement a HACCP plan for their operations.

The CFP at its 2000 meeting recommended that FSIS and FDA ask the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) to review the data on safe cooling times for cooked PHF. The review would include data from a study, submitted to the CFP, showing that cooling of a meat product from 130°F to 45°F can safely take place in 15 hours based on a study by V.K. Juneja, et al., 1994. According to the authors of the study, continuous cooling of a meat product from 130°F to 45°F in 15 hours permitted about 1 log growth of *C. perfringens*.

In response to the CFP recommendation, the FSIS Administrator and CFSAN agreed that the data referenced in the CFP recommendation do not support a change in the FSIS guidance or the Rule section 189 and considered it inadvisable to ask the NACMCF to undertake the task requested for several reasons:

1. The study did not address growth of *C. botulinum*.
2. The results are from a carefully controlled laboratory study in which cooling of the product was steady and continuous, conditions difficult to maintain in most commercial processing or retail environments even with data loggers and other control mechanisms in place.
3. The study was done only on ground beef and may not be applicable to other meat and poultry or to other PHF.

As an alternative response, CFSAN and FSIS advised CFP that they would provide this written position paper to clarify their joint position on the cooling issues.

410 IAC 7-24-190 Cooling methods

Large food items, such as roasts, turkeys, and large containers of rice or refried beans, take longer to cool because of the mass and volume from which heat must be removed. By reducing the volume of the food in an individual container, the rate of cooling is dramatically increased and opportunity for pathogen growth is minimized. If the hot

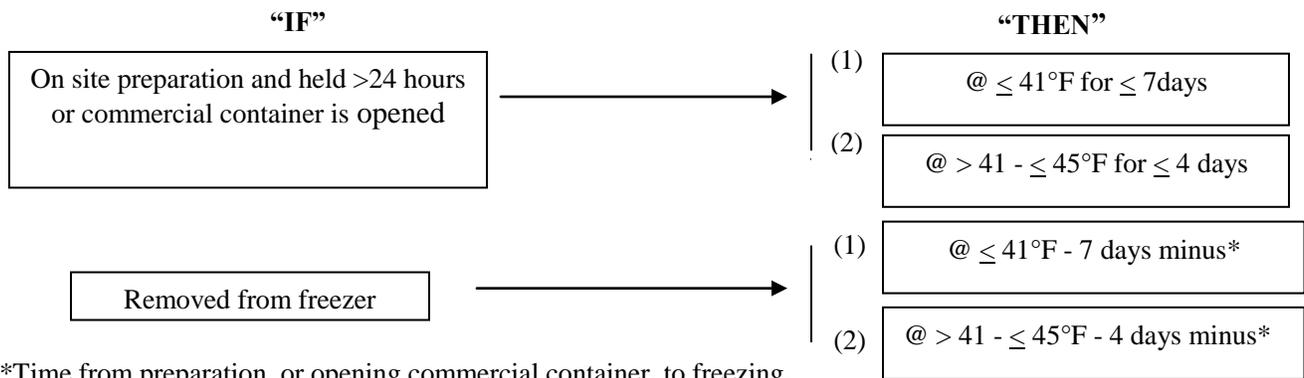
food container is tightly covered, the rate of heat transfer is reduced, i.e., the time required for cooling and the time the food is exposed to optimal temperatures for bacterial multiplication or toxin production are increased.

Alternatives to conventional methods include avoiding the need to cool larger masses by preparing smaller batches closer to periods of service or chilling while stirring hot food in containers within an ice water bath. Commercial refrigeration equipment is designed to hold cold food temperatures, not cool large masses of food. Rapid chilling equipment is designed to cool the food to acceptable temperatures quickly by using very low temperatures and high rates of air circulation.

410 IAC 7-24-191 Ready-to-eat, potentially hazardous food; date marking

410 IAC 7-24-192 Disposition of ready-to-eat potentially hazardous food; date marking

Summary Chart
Ready-to-eat, Potentially Hazardous Food
Date Marking Section 191 A-E and Disposition section 192



*Time from preparation, or opening commercial container, to freezing.

Example: The morning of October 1, a chicken was cooked, then cooled, refrigerated for 2 days at 41°F and then frozen. If the chicken is thawed October 10, the food must be consumed or discarded no later than midnight of October 14.

Date	Shelf Life Day	Action
Oct 1	1	Cook/cool
Oct 2	2	Cold hold at 41°F
Oct 3		Freeze
Oct 10	3	Thaw to 41°F
Oct 11	4	Cold hold
Oct 12	5	Cold hold
Oct 13	6	Cold hold
Oct 14	7	Consume or discard

Refrigeration prevents food from becoming a hazard by significantly slowing the growth of most microbes. The growth of some bacteria, such as *Listeria monocytogenes*, is significantly slowed but not stopped by refrigeration. Over a period of time, this and similar organisms may increase their risk to public health in RTE foods.

The date by which the food must be consumed takes into consideration the differences in growth of *Listeria monocytogenes* at 41°F and 45°F. Based on a predictive growth curve modeling program for *Listeria monocytogenes*, RTE PHF may be kept at 41°F a total of 7 days or at 45°F a total of 4 days. Therefore, the period of time allowed before consumption is shortened for food in refrigerators incapable of maintaining food at 41°F but capable of maintaining it at 45°F or below. Food which is prepared and held, or prepared, frozen, and thawed must be controlled by date marking to ensure its safety based on the total amount of time it was held at refrigeration temperature, and the opportunity for *Listeria monocytogenes* to multiply, before freezing and after thawing. Refrigerated PHF must be consumed, sold or discarded by the expiration date.

Date marking is the mechanism by which the Rule requires active managerial control of the temperature and time combinations for cold holding. Industry must implement a system of identifying the date or day by which the food must be consumed, sold, or discarded. Date marking requirements apply to containers of processed food that have been opened and to food prepared by a retail food establishment, in both cases if held for more than 24 hours, and while the food is under the control of the retail food establishment. This provision applies to both bulk and display containers. It is not the intent of the Rule to require date marking on the labels of consumer-ordered packages.

A date marking system may be used which places information on the food, such as on an overwrap or on the food container, which identifies the first day of preparation, or alternatively, may identify the last day that the food may be sold or consumed on the premises. A date marking system may use calendar dates, days of the week, color-coded marks, or other effective means, provided the system is disclosed to the regulatory authority upon request, during inspections.

FDA/USDA/CDC *Listeria monocytogenes* Risk Assessment

In October, 2003, FDA, in cooperation with USDA/FSIS and CDC, released the “Quantitative Assessment of the Relative Risk to Public Health from Foodborne *Listeria monocytogenes* Among Selected Categories of RTE Foods”. This initiative included the development of 23 separate risk assessments and analysis of the relative risks of serious illness and death associated with consumption of 23 categories of RTE foods. These categories included: seafood, produce, meats, dairy products, and deli salads.

In examining these closely, FDA showed that 5 factors are important in measuring the public health impact to consumers from foodborne listeriosis. These factors are: (1) amounts and frequency of consumption of a RTE food; (2) frequency and levels of *L. monocytogenes* in a RTE food; (3) potential of the food to support growth of the bacterium during refrigeration; (4) refrigerated storage temperature; and (5) duration of refrigerated storage before consumption.

Based on these 5 factors, the 23 categories of RTE foods were ranked according to their relative risk of contamination and growth of *Listeria monocytogenes*. The risk categories used were: very high risk; high risk; moderate risk; low risk; and very low risk.

Impact of the *Listeria monocytogenes* Risk Assessment on Date Marking

Based on the results of the risk assessment and the recommendations from the 2004 CFP meeting, it was necessary to re-evaluate date marking in an effort to focus the provision on very high and high risk foods, while at the same time, exempting foods that present a very low, or low risk of contamination and growth of *Listeria monocytogenes*. Based on this evaluation, date marking provisions of the Rule do not apply to the following foods:

Deli Salads Prepared and Packaged in a Food Processing Plant

Examples of deli salads include ham salad, chicken salad, egg salad, seafood salad, pasta salad, potato salad, and macaroni salad, manufactured according to 21 CFR 110. According to data from the risk assessment, deli salads prepared and packaged by a food processing plant contain sufficient acidity, along with the addition of preservatives (e.g., sorbate, benzoates), to prevent the growth of *Listeria monocytogenes*. There are estimates that 85% of all deli salads are prepared and packaged in a food processing plant and do not support growth. Based on discussions with deli salad manufacturers and trade associations, it is a nearly universal practice for food processing plants preparing and packaging deli salads to add one or more preservatives that inhibit the growth of *Listeria monocytogenes*. Based on their wide use within this segment of the industry and their effectiveness at inhibiting the growth of *Listeria monocytogenes*, all deli salads prepared and packaged in a food processing plant are exempt from date marking. However, all deli salads prepared in a retail food establishment require date marking.

Hard and Semi-Soft Cheeses

In December, 1999, FDA issued an exemption from date marking for certain types of hard and semi-soft cheeses, <http://www.cfsan.fda.gov/>, based on the presence of several factors that may control the growth of *Listeria monocytogenes*. These factors may include organic acids, preservatives, competing microorganisms, pH, water

activity, or salt concentration. The results of the risk assessment support this interpretation and therefore, hard and semi-soft cheeses each manufactured according to 21 CFR 133 are exempt from date marking.

List of Some Hard and Semi-Soft Cheeses Exempt from Date Marking			
Hard Cheeses		Semi-Soft Cheeses	
Asadero	Lapland	Asiago soft	Manchego
Abertam	Lorraine	Battelmatt	Monterey
Appenzeller	Oaxaca	Bellelay (blue veined)	Muenster
Asiago medium or old	Parmesan	Blue	Oka
Bra	Pecorino	Brick	Port du Salut
Cheddar	Queso Anejo	Camosum	Provolone
Christalina	Queso Chihuahua	Chantelle	Queso de
Colby	Queso de Prensa	Edam	Bola
Cotija Anejo	Romanello	Fontina	Queso de la
Cotija	Romano	Gorgonzola (blue veined)	Tierra
Coon	Reggiano	Gouda	Robbiole
Derby	Sapsago	Havarti	Roquefort
Emmentaler	Sassenage (blue veined)	Konigskase	(blue veined)
English Dairy	Stilton (blue veined)	Limburger	Samsoe
Gex (blue veined)	Swiss	Milano	Tilsiter
Gloucester	Tignard (blue veined)		Trappist
Gjetost	Vize		
Gruyere	Wensleydale (blue veined)		
Herve			

Cultured Dairy Products

Cultured dairy products include yogurt, sour cream, and buttermilk, each manufactured according to 21 CFR 131. Many of these products often are low pH foods manufactured with lactic acid fermentation. Data from the risk assessment show that *Listeria monocytogenes* does not grow in these foods and therefore, these products are exempt from date marking.

Preserved Fish Products

Preserved fish products include pickled herring and dried, or salted cod, and other acidified fish products, manufactured according to 21 CFR 114. Data from the risk assessment show that the high salt and/or acidity of these products does not allow for the growth of *Listeria monocytogenes* and therefore, these products are exempt from date marking. This exemption does not apply to hot or cold smoked fish products, nor does it apply to fish products that are dried, marinated, or otherwise preserved on-site, in a retail food establishment, such as ceviche.

USDA-regulated products

Date marking provisions of the Rule do not apply to shelf stable RTE meat and poultry products. Shelf stable RTE meat and poultry products are not required by USDA to be labeled “Keep Refrigerated.” For these products, the nitrite and salt in the cure and the lower pH resulting from fermentation give additional protection against microbial growth. Some fermented sausages and salt-cured products are shelf stable, do not require refrigeration, and do not bear the label “Keep Refrigerated.” To be shelf stable, a product manufactured under USDA inspection must have a process that results in a product that meets one of the recognized objective criteria for shelf stability, such as water activity, moisture-protein ratio (MPR), or combination of MPR and pH (acidity). Therefore they are exempt from the Rule date marking requirements.

Shelf stable fermented sausages, such as pepperoni and dry salami do not have to be refrigerated or date marked. Shelf stable salt-cured products, such as prosciutto, country cured ham, or Parma ham do not require refrigeration or Rule date marking. Other salt-cured products include basturma, breasaola, coppa, and capocola. Some RTE fermented

sausages and salt-cured products must be refrigerated and therefore bear the USDA-required label “Keep Refrigerated.” Examples of these products are cooked bologna, cooked salami, and sliced country ham which are RTE fermented products that need refrigeration. Bologna is a cooked, perishable sausage and there are other salamis, e.g., cotto that are perishable.

Regarding the exemption from date marking for shelf-stable sausages in a casing, the exemption does not apply if the casing is removed. The intact casing on shelf-stable sausages may be overwrapped to protect the cut face of the sausage. With shelf stable (not potentially hazardous) sausages, the intact casing provides a barrier to contamination (although not an absolute one), the exposed face is likely to be sliced again within 4 or 7 days, and contamination is minimized because only the face is exposed. The coagulated protein that occurs on the surface of some nonshelf stable cooked sausages is not a casing.

Slices of cured and fermented sausages that require refrigeration and are kept for 24 hours or longer do need to be date marked.

If open dating information is applied to lunchmeats at a federally inspected meat or poultry establishment, the information must comply with the requirements in 9 CFR 317.8 and 381.129. However, such dating is not required by USDA/FSIS and if applied, would not supercede or replace date marking requirements established by the Rule or by State/local authorities that apply after the food is opened in a retail establishment.

Manufacturer’s use-by dates

It is not the intent of this provision to give a product an extended shelf life beyond that intended by the manufacturer. Manufacturers assign a date to products for various reasons, and spoilage may or may not occur before pathogen growth renders the product unsafe. Most, but not all, sell-by or use-by dates are voluntarily placed on food packages. Although most use-by and sell-by dates are not enforceable by regulators, the manufacturer's use-by date is its recommendation for using the product while its quality is at its best. Although it is a guide for quality, it could be based on food safety reasons. It is recommended that retail food establishments consider the manufacturer’s information as good guidance to follow to maintain the quality (taste, smell, and appearance) and salability of the product. If the product becomes inferior quality-wise due to time in storage, it is possible that safety concerns are not far behind.

It is not the intention of this provision that either the manufacturer’s date or the date marked by the retail food establishment be placed on consumer-ordered packages.

410 IAC 7-24-193 Time as a public health control

The 2000 CFP meeting recommended that FDA ask the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) to review the Rule provision that addresses using time alone as a public health control, section 193. In response to the CFP recommendation, FDA in consultation with USDA/FSIS, determined that there is sufficient scientific information available to support the current provision in the Rule without requesting consideration by the NACMCF. As an alternative response, FDA informed the CFP that it would provide the following position paper on using time alone as a public health control.

The following is a discussion of the basis for the provisions in 2005 FDA Food Code Section 3-501.19 which allows a PHF that is RTE to be stored without temperature control for up to 4 hours, after which it must be discarded or consumed or for up to 6 hours for refrigerated food, if the food is 41°F when initially removed from temperature control, and as long as the food temperature does not exceed 70°F. It is provided in this document only to explain the reasoning in allowing time alone to be used as a public health control for food safety. The six (6) hour provision is not yet adopted in the Indiana Rule

FDA Position Paper

Background information

Food kept without temperature control allows product to warm or cool as it equilibrates with the environment. Each temperature scenario incurs different risks in regard to the type of foodborne pathogens able to grow and the rate of growth likely to occur. For both cooling and warming conditions, growth depends on the amount of time the food spends in an optimum growth temperature range during its equilibration with its surroundings. Several factors influence the rate of temperature change in a food, such as the type of food, thickness of the food, and temperature differential between the food and its surroundings. When evaluating the safety of a 4-hour limit for food with no temperature control, products and environmental parameters must be selected to create a worst-case scenario for pathogens growth and possible toxin production.

Holding Cold Food Without Temperature Control

When a food is removed from refrigerated storage and begins to warm to room temperature, *Listeria monocytogenes* is a primary organism of concern. Even while food is held at refrigeration temperatures, the growth potential of *L. monocytogenes* warrants concern for potentially hazardous RTE foods. Although the FDA and USDA have a zero tolerance for *L. monocytogenes* in RTE food, conditions are permitted in the Rule that would allow *L. monocytogenes* cells 1 log of growth (3.3 generations). *Salmonella* is also a concern especially with products containing eggs. However *L. monocytogenes* grows more rapidly than *Salmonella* at refrigeration and room temperatures. By ensuring minimal *Listeria* growth in food, the threat from *Salmonella* would be negligible. Warming conditions will allow food to remain exposed to temperatures that allow *B. cereus* to produce emetic toxin. However the 4-hour time constraint in the Rule is sufficient to prevent any toxin formation.

For food refrigerated at 41°F or 45°F then transferred to an ambient temperature of 75°F for 4 hours, the growth rate of *L. monocytogenes* remains slow enough to ensure that the critical limit of 1 log growth is not reached. Published generation times at 75°F for *L. monocytogenes* in food were not found, however published values at 68°F and 70°F in egg and milk products confirmed slow *L. monocytogenes* growth at room temperatures.

Using the USDA Pathogen Modeling Program (PMP) and assuming the optimum conditions of pH 6.8, 0.5% NaCl, 0.0% nitrite, *L. monocytogenes* would require more than 4 hours to grow 1 log at 75°F. The PMP is based on broth studies and not on food products. Therefore, the growth rates reported at various temperatures by the PMP are faster than growth rates in most food products. Another factor exaggerating the growth rate in this warming scenario as predicted by the PMP is the assumption that the food product spent all 4 hours at 75°F. Obviously, food equilibrates with the surrounding environment at a gradual rate and would not equilibrate instantly.

Unfortunately, there are no models that take changing temperatures into consideration when predicting growth. Likewise, there are very few published papers dealing with the growth of organisms in food during warming. The conservative nature of the 4-hour limit for keeping foods without temperature control allows for a needed margin of safety if the temperature of the environment is higher than 75°F.

It is important to note that PHF held without cold holding temperature control for a period of 4 hours do not have any temperature control or monitoring. These foods can reach any temperature when held at ambient air temperatures as long as they are discarded or consumed within the four hours.

Holding Hot Food without Temperature Control

The second scenario for food without temperature control exists when food is cooked according to Rule recommendations, then kept at room temperature for 4 hours before discarding. Foodborne pathogens of concern for an uncontrolled temperature scenario are sporeformers including *Clostridium perfringens* and *Bacillus cereus*. Food cooked according to Rule guidelines should be free of vegetative cells. However, the heat requirements are not sufficient to kill spores of *C. perfringens* or *B. cereus* and may actually serve as a heat shock that activates the spores. *B. cereus* is found commonly in outbreaks attributed to inadequate hot holding of starchy foods like rice, and has been isolated in a multitude of food products. *C. perfringens* is found commonly in outbreaks attributed to inadequate hot

holding of beef and poultry. Despite the prevalence of both spores in nature, *C. perfringens* cases are estimated to be more numerous than *B. cereus* cases by a factor of 10.

B. cereus can produce emetic toxin in food, and the optimum temperature for the production of toxin is between 77°F and 86°F. However, the time needed to produce the toxin is longer than the time the food will be exposed to any temperature range with a 4-hour holding limit. Both *C. perfringens* and *B. cereus* produce enterotoxin inside the intestine of the infected host if substantial numbers of vegetative cells are present in the food (10⁵-7 CFU/g). Although the reported levels of both spores in raw foods vary in the literature, generally the level expected in food can be assumed to be low (around 10-1000 CFU/g). This implies that conditions allowing 1 log growth of either spore could be tolerated in food.

During the time without temperature control, the temperature of the food could decrease slowly enough to expose spores of both organisms to optimal growth conditions for a significant length of time. Like warming, several variables exist that determine the rate of heat transfer. Because of the wide variety of foods prepared it would be impossible to generalize how fast a typical product loses temperature after cooking. As with warming, it is prudent to imagine a worst-case scenario where heat loss is slowed. A beef roast slow cooked to 130°F for the appropriate time according to the Rule was used as consideration for possible spore growth. Cooking roast beef to 130°F can create an anaerobic environment in both the meat and gravy. The low internal temperature creates a small temperature differential with the environment (assumed at 75°F), allowing for a slower decrease in the food's temperature.

After evaluating published studies as well as data collected at the FDA, the surface of a roast beef or rolled meat product would lose heat quickly enough to discourage significant growth of either *C. perfringens* or *B. cereus*. If all spores were distributed on the surface of the product by either pre- or post-cooking contamination, storing this product for 4 hours at room conditions would be considered safe. Likewise, products that are stirred or products that lose heat faster than a roast would also be considered safe.

FDA intends to do research regarding food products that may have spores in the center of the product, and further evaluate if there are potential hazards that may be associated with them while held without temperature control for 4 hours.

End of FDA position paper

At the 2004 meeting of the CFP, a committee submitted and the Conference accepted a document that examined scientific research related to the growth of *Listeria monocytogenes*, and the influence of time and temperature on its growth. The CFP committee report is found at:

http://www.foodprotect.org/doc/04_issues/FOLDER_ATTACHMENTS/III-008a%20finalreport-timeasapublichealthcontrol.pdf

The 2004 CFP report stated that the USDA-PMP program can be used as a tool to estimate time periods for a 1-log increase in growth for *Listeria monocytogenes* in ideal (laboratory media) growth conditions. Using this modeling approach, at 41°F, 45°F, and 50°F, the time for a 1-log increase was, 87.8, 53.9, and 34.7 hours, respectively. At room temperature 70°F a 1-log increase was noted at 5.2 hours and at ideal growth temperatures 95°F, the reported time for a 1-log increase was 3.0 hours. In general, the data from the USDA-PMP program provides very conservative growth data and, in most cases, growth would be expected to be less rapid in a food system. This table does provide comparative information relative to growth rates at different holding temperatures in the event that time was used as a factor in managing food safely.

The report further recommended that food could safely be held for up to 6 hours without external temperature control as long as the food temperature did not exceed 70°F. Based on that report and data from the Quantitative Assessment of the Relative Risk to Public Health from Foodborne *Listeria monocytogenes* Among Selected Categories of Ready-to-Eat Foods September 2003, the 2005 FDA Model Food Code allows PHF to be stored up to 6 hours without external temperature control provided that the food temperature does not exceed 70°F and the food is discarded or consumed at the end of the 6 hours. Again, this has not been adopted in Indiana.

The Safety of the Time as a Public Health Control Provision from Cooking Temperatures (135°F or above) to Ambient

FDA conducted in-house laboratory experiments to test the safety of the existing TPHC provisions of 4 hours without temperature control starting with an initial temperature of 135°F or above. *Clostridium perfringens* was chosen to represent a worst case scenario pathogen for foods allowed to cool from cooking temperatures to ambient without temperature control because its spores can survive normal cooking procedures, it can grow at relatively high temperatures (>120°F) and it has a short lag period. *C. perfringens* spores were inoculated into foods that were cooked and then cooled to yield a cooling curve that would promote outgrowth as quickly as possible. The growth data suggest that the existing 4-hour TPHC provision will be safe for 6 hours after cooking, with the additional 2-hour margin of safety built-in for consumer handling.

Summary of Consumer Handling Practices Study

An Audits International study was funded in 1999 by FDA to determine the food handling practices of consumers purchasing food at retail and returning home to refrigerate their items. Forty-six (46) states are represented, and the data comprises several food groups purchased from different grocery-store types. The food groups represented were: pre-packaged lunch meat, deli-counter products, seafood, fresh meat, pre-packaged deli product, liquid dairy, semi-solid dairy product, ice cream, frozen entrées, frozen novelties and whipped topping.

The study evaluated information regarding time and food temperature at retail food stores, time to reach home refrigeration, temperature after transport home, location and type of retail establishment where purchase was made and type of product purchased.

For product temperature at retail and after transportation, 5 product categories were used: pre packaged lunch meat, pre packaged deli product, deli counter products, seafood and fresh meat. These categories were considered most applicable to the TPHC recommendations. The temperature ranges for these products at retail and after transport to the home are summarized in Figures 1 and 2 respectively. The data suggests that with current retail refrigeration practices, 25% of items are held above 45°F (Figure 1). The data also show that by the time the product arrives at the home, 98% of products were at 65°F or less (Figure 2).

The time of transport for all food categories from the retail establishment to home refrigeration was also recorded. The data summarized in Figure 3 shows that over 97% of the foods purchased were ready to be placed in refrigeration within 2 hours of purchase. For this histogram, all food categories except for frozen entrées were included. Because all foods end up bagged and transported together, the time each product was transported to the home was considered a valid data point and therefore used. Based on the data, a benchmark was established that PHF purchased in a food establishment would be either consumed, or placed under temperature control, within 2 hours.

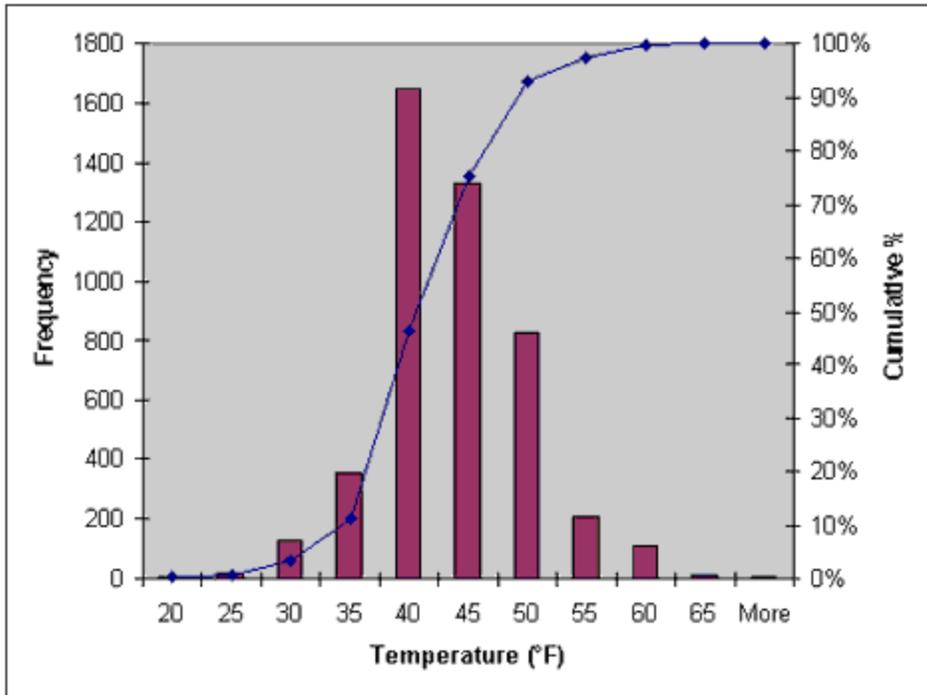


Figure 1. Temperature of refrigerated products at retail (Audits International).

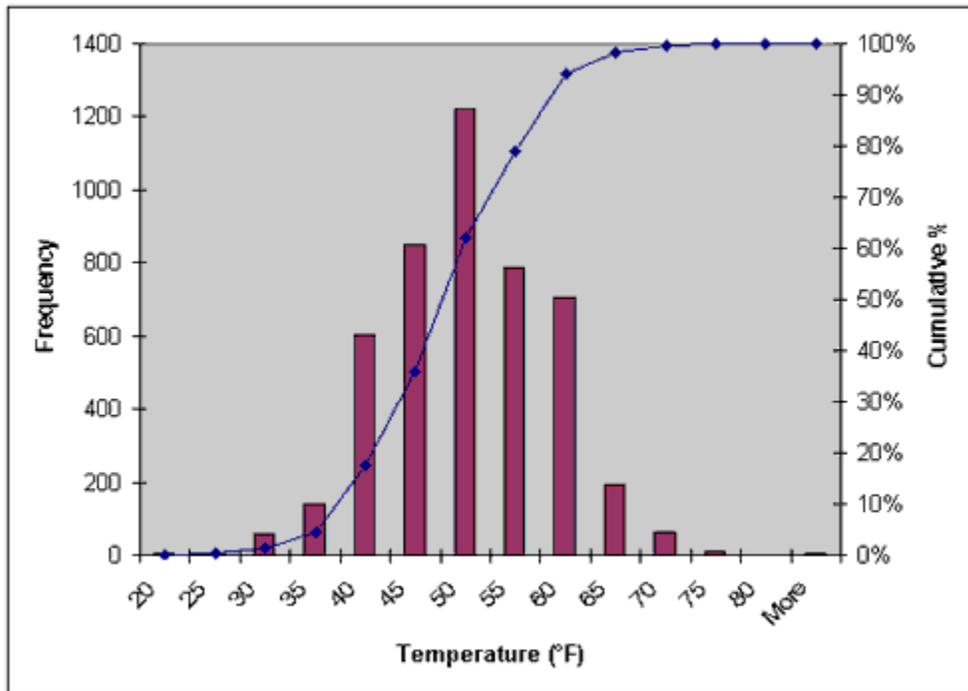


Figure 2. Product temperatures after transport to the home (Audits International).

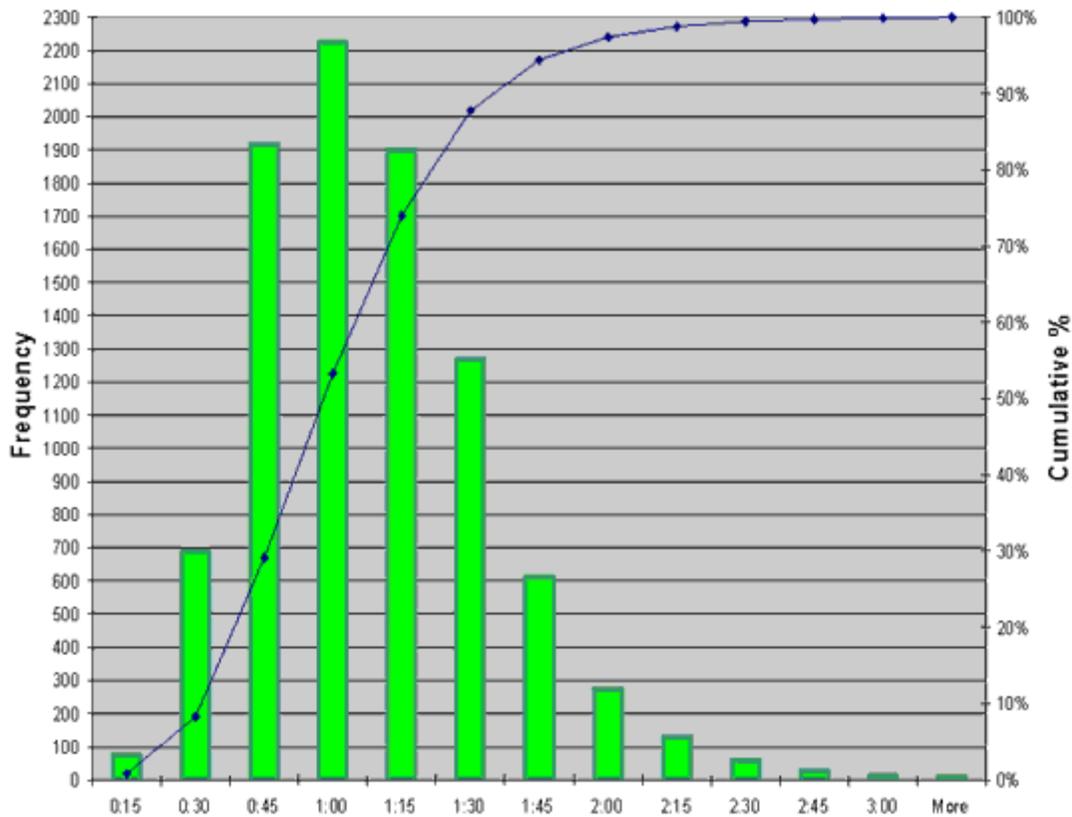


Figure 3. Times reported for transport of grocery items from the retail outlet to the home (Audits International).

The Safety of the Time as a Public Health Control Provision from Refrigeration Temperatures (41°F or less) to Ambient

As noted above, the current TPHC provision has two time provisions. Food can be kept with no temperature stipulations for 4 hours in a food establishment, at which time the food must be cooked and served, served if RTE, or discarded within the four hours. However, if food does not exceed 70°F, it may be held for 6 hours and cooked and served, served if RTE or discarded within the six hours. For foods warming from refrigeration to ambient temperatures, the data from the Audits International study outlined above, along with simulations from the USDA Pathogen Modeling Program (PMP), were used to determine the safety of the existing TPHC recommendations.

Assuming pathogen growth in foods going from refrigeration (41°F or less) to ambient temperature, the following parameters were used for the PMP simulation:

- 65°F was used as the temperature for the entire simulation;
- 2 hours were added to all times (4h or 6h) allowed in the current TPHC recommendation, to factor in transportation time (per the Audits International study outlined above);
- The data were generated from PMP broth models (pH 6.8), with the minimal NaCl and no sodium nitrite.

Table 1 summarizes the predicted growth of *Bacillus cereus* (vegetative), *Escherichia coli*, *Listeria monocytogenes*, *Salmonella* spp., *Shigella flexneri*, and *Staphylococcus aureus*, using the PMP and based on the assumptions discussed above. The data predicted that less than 1-log growth would be seen for each organism, during the 8 hour time period. Thus, the data show that the current 4 and 6 hour TPHC provisions from 41°F or less to ambient, allow minimal growth of a number of pathogens of concern.

Table 1. The USDA Pathogen Modeling Program estimation of growth (Log CFU/g) of several pathogens for 6 hours or 8 hours, at 65°F.

Pathogens	6 Hours	8 hours
<i>B. cereus</i> (vegetative cells)	0.62	0.87
<i>E. coli</i>	0.35	0.52
<i>L. monocytogenes</i>	0.47	0.71
<i>Salmonella Spp.</i>	0.25	0.41
<i>S. flexneri</i>	0.26*	0.34*
<i>S. aureus</i>	0.38*	0.51*

* Model predictions were in 5 hour increments, the 6 and 8 hour data was extrapolated between 5 hour and 10 hour predictions.

References

[Audits International. 1999. U.S. Food Temperature Evaluation.](#)

U.S. Department of Agriculture. 1997. *Pathogen Modeling Program*. USDA Agricultural Research Service, Wyndmoor, PA.

Food and Drug Administration. 2006. Growth of *Clostridium perfringens* inoculated into beef roasts and meatloaf (unpublished data).

End of Summary of Consumer Handling Practices Study

Raw eggs

Recipes in which more than one egg is combined carry an increased risk of illness and possible serious consequences for certain people. It is due to this increased risk, and documented occurrences of foodborne illness and death among highly susceptible populations from temperature-abused raw shell eggs contaminated with *Salmonella enteritidis* that the use of time as a public health control in institutional settings is not allowed.

410 IAC 7-24-195 Reduced oxygen packaging; criteria

Reduced oxygen packaging (ROP) encompasses a large variety of packaging methods where the internal environment of the package contains less than the normal ambient oxygen level (typically 21% at sea level), including vacuum packaging (VP), modified atmosphere packaging (MAP), controlled atmosphere packaging (CAP), cook chill processing (CC), and sous vide (SV). Using ROP methods in food establishments has the advantage of providing extended shelf life to many foods because it inhibits spoilage organisms that are typically aerobic.

This state of reduced oxygen is achieved in different ways. Oxygen can be withdrawn from the package (VP) with or without having another gas, such as nitrogen or carbon dioxide replacing it (MAP). Fresh produce and raw meat or poultry continue to respire and use oxygen after they are packaged. Bacterial activity also plays a role here. Packaging material that readily allow the transmission of oxygen is usually designated by an Oxygen Transfer Rate of 10,000 cm²/m³/24 hours or greater. A reduced oxygen atmosphere will result with an Oxygen Transmission Rate of 10-100. The process of cooking drives off oxygen (the bubbling is oxygen gas coming off) and leaves a reduced oxygen level in the food, thus, microenvironments of reduced oxygen are possible even without packaging that has a barrier to oxygen transmission.

Most foodborne pathogens are anaerobes or facultative anaerobes able to multiply under either aerobic or anaerobic conditions, therefore special controls are necessary to control their growth. Refrigerated storage temperatures of 41°F may be adequate to prevent growth and/or toxin production of some pathogenic microorganisms but non-proteolytic *C.*

botulinum is able to multiply well below 41°F. For this reason, *C. botulinum* becomes one of the pathogens of concern for ROP. Controlling its growth will control the growth of other foodborne pathogens as well.

The control of *C. botulinum* when using ROP is usually accomplished using multiple hurdles or barriers to growth. Section 195(b)(2) identifies secondary barriers that will control the growth of *C. botulinum* when used in conjunction with a food storage temperature of 41°F or less. They include A_w of 0.91 or less; pH of 4.6 or less; cured, USDA inspected meat or poultry products using substances specified in 9 CFR 424.21; or high levels of competing microorganisms. *C. botulinum* will not produce toxin below a A_w of 0.91. Nitrite, used in meat and poultry curing, inhibits the outgrowth of *C. botulinum* spores. Most foodborne pathogens do not compete well with other microorganisms, therefore foods that have a high level of spoilage organisms or lactic acid bacteria can safely be packaged using ROP.

Naturally fermented cheeses that meet the Standards of Identity for hard, pasteurized process, and semisoft cheeses in 21 CFR 133.150, 21 CFR 133.169, or 21 CFR 133.187, respectively, contain various intrinsic factors, often acting synergistically, that together act as a secondary barrier to pathogen growth along with refrigerated storage at 41°F or less. This combination of factors could include some or all of the following: a lower pH, production of organic acids, and natural antibiotics or bacteriocins, such as nisin by lactic acid bacteria, salt (NaCl) added during processing, low moisture content, added preservatives, and live competing cultures. Very few outbreaks have occurred that were associated with cheese. The few outbreaks of foodborne illness associated with cheeses or cheese products could be traced in large part to temperature abuse with storage at uncontrolled ambient air temperatures. Examples of cheeses that may be packaged under ROP include Asiago medium, Asiago old, Cheddar, Colby, Emmentaler, Gruyere, Parmesan, Reggiano, Romano, Sapsago, Swiss, pasteurized process cheese, Asiago fresh and soft, Blue, Brick, Edam, Gorgonzola, Gouda, Limburger, Monterey, Monterey Jack, Muenster, Provolone, and Roquefort. Soft cheeses, such as Brie, Camembert, Cottage, and Ricotta may not be packaged under reduced oxygen because of their ability to support the growth of *L. monocytogenes* under modified atmosphere conditions.

When a food to be packaged under reduced oxygen conditions cannot reliably depend on secondary barriers, such as A_w , pH, nitrite in cured meat products, high levels of competing microorganisms or intrinsic factors in certain cheeses, time/temperature becomes the critical controlling factor for growth of *C. botulinum*. In cook-chill processing where food is cooked then sealed in a barrier bag while still hot and sous vide processing where food is sealed in a barrier bag and then cooked, both depend on time/temperature alone as the only barrier to pathogenic growth. Therefore, monitoring critical limits including those established for cooking to destroy vegetative cells, cooling to prevent outgrowth of spores/toxin production, and maintaining cold storage temperatures of 34°F or less to inhibit growth and/or toxin production of any surviving pathogens is essential. Since there are no other controlling factors for *C. botulinum* in a cook-chill or sous vide packaging system, temperature control must be continuously monitored electronically and visually examined twice daily to verify that refrigeration temperatures are adequate.

New technology makes it relatively easy to continuously and electronically monitor temperatures of refrigeration equipment used to hold cook chill and sous vide products at 34°F or less. Thermocouple data loggers can connect directly with commonly available thermocouple probes. Recording charts are also commonly used. Temperature monitors and alarm systems will activate an alarm or dialer if temperatures rise above preset limits. Nickel-sized data loggers are available to record temperatures which can be displayed using computer software. Since surveys have shown that temperature control in home kitchens is not always adequate, food packaged using cook chill or sous vide processing methods cannot be distributed outside the control of the food establishment doing the packaging.

A Hazard Analysis Critical Control Point (HACCP) plan is essential when using ROP processing procedures. *C. botulinum* is a potential hazard which must be controlled in most foods unless the food is a low acid canned food produced under 21 CFR Part 108 or 113 or an acidified food produced under 21 CFR 114. Critical control points, critical limits, monitoring, record keeping, corrective actions, and verification procedures will vary based on the type of food and type of ROP technology used. It must be stressed that the current Indiana Rule only addresses *C. botulinum* as a hazard in ROP packaging.

When a RFE intends to use ROP technology but, for culinary reasons, does not intend to use one of the secondary barriers defined in section 195 (b)(2), the operator must submit an application for a variance under 114 providing evidence that the ROP methodology intended for use is safe.

Unfrozen, raw fish and other seafood are specifically excluded from ROP because of these products' natural association with *C. botulinum* type E which grows at or above 37-38°F. Fish and seafood that are frozen before, during and after the ROP packaging process are allowed.

410 IAC 7-24-196 Consumption of raw or undercooked foods of animal origin

Refer also to the public health reason for section 182

Purpose:

At issue is the role of government agencies, the regulated industry, and others in providing notice to consumers that animal-derived foods that are not subjected to adequate heat treatment pose a risk because they may contain biological agents that cause foodborne disease. The deliverance of a balanced message that communicates fairly to all consumers and, where epidemiologically supported, attempts to place risk in perspective based on the consumer's health status and the food being consumed is part of the challenge. Notification of risk must be achieved via a meaningful message and in a manner that is likely to affect behavior. The following information is to alert the reader to the options available to retail food establishments in advising consumers of the increased possibility of foodborne illness when animal-derived foods are eaten raw or undercooked.

Background:

Although no specific advisory language was recommended, beginning with the 1993 Code, FDA included a codified provision for a point-of-purchase consumer advisory.

"FDA has requested comments and will consider the responses as well as other information that is available related to the risks involved and methods of risk communication to determine what action may be necessary by FDA to effectively inform consumers."

Consumer Focus Groups:

During 1996 - 1998, FDA conducted two different consumer focus group studies. Because the first set of focus groups (conducted before the 1997 Code) were not receptive to the language recommended at the 1996 CFP meeting, that language was not included in the 1997 Code. Before the 1998 CFP meeting, the Agency convened a second set of focus groups with a modified approach. The latter set expressed similar thoughts as those in the earlier set and a pattern for consumer acceptance and receptiveness to menu-based advisories emerged.

It became apparent that there is a general appreciation for "disclosure" of what consumers view as "hidden ingredients", for example, whether a particular menu item contains raw egg. In addition to disclosure being viewed as helpful, consumers are accepting, if not appreciative, of a "reminder" that consuming raw or undercooked animal-derived foods carries an increased risk of foodborne illness. In the retail food establishment venue, consumers are less willing to accept a message that extends beyond a reminder and becomes a lesson or an educational message.

Satisfactory Compliance:

FDA submitted to the 1998 CFP meeting an Issue that asked the Conference to discuss an approach that incorporated the knowledge obtained from the consumer testing. It was the consensus of the CFP that satisfactory compliance with the Code's consumer advisory provision is fulfilled when both a disclosure and reminder are provided, as described in section 196 of the Rule. Disclosure is achieved when there is clear identification of animal-derived foods that are sold or served raw or undercooked, and of items that either contain or may contain (to allow for ingredient substitution) such raw or undercooked ingredients. A third option for the consumer "reminder" was added later. The reminder is a notice about the relationship between thorough cooking and food safety.

Two options were endorsed for disclosure and two for the reminder. One of the reminder options is a menu statement that advises consumers that food safety information about the disclosed items is available upon request. Essential criteria for such written information is available, with a downloadable model brochure, on the CFSAN Web Page at:

<http://www.cfsan.fda.gov/~dms/fc99guid.html#brochure>. All brochures must meet these essential criteria. The other option is a short notice alerting consumers to the increased risk of consuming the disclosed menu items.

In response to concerns raised by the Interstate Shellfish Sanitation Conference (ISSC) in an October 8, 1998 letter to FDA, a third option has been added to allow for a statement that links an increased risk of illness to consumption of raw or undercooked animal foods by persons with certain medical conditions.

The information contained in both the disclosure and reminder should be publicly available and readable so that consumers have benefit of the total message (disclosure and reminder) before making their order selections.

It is not possible to anticipate all conceivable situations. Therefore, there will always be a need for discussion between the retail food establishment and the regulatory authority as to the most effective way to meet the objectives of satisfactory compliance.

The “*Implementation Guidance for the Consumer Advisory Provision of the FDA Food Code*” (section 3-603.11 in the 2005 FDA Model Food Code), is a resource intended to assist regulators and industry in the implementation of the Consumer Advisory provision. It is recommended that it be used in conjunction with the FDA Code. It is available on the FDA/CFSAN web page at: <http://www.cfsan.fda.gov/~ear/rf-fccap.html>.

Locating the Advisory:

Disclosure of raw or undercooked animal-derived foods or ingredients and reminders about the risk of consuming such foods belong at the point where the food is selected by the consumer. Both the disclosure and the reminder need to accompany the information from which the consumer makes a selection. That information could appear in many forms, such as a menu, a placarded listing of available choices, or a table tent.

Educational Messages:

Educational messages are usually longer, more didactic in nature, and targeted to consumers who have been alerted to the food safety concern and take the initiative to obtain more detailed information. It is expected that, in most cases, educational messages that are provided pursuant to section 196 (i.e., in situations where the option for referring the consumer to additional information is chosen), will be embodied in brochures that will not be read at the site where the immediate food choice is being made. Nonetheless, such messages are viewed as an important facet of arming consumers with the information needed to make informed decisions and, because the information is being requested by the consumer, it would be expected to play a role in subsequent choices.

Applicability in RFEs:

The consumer advisory is intended to apply to all retail food establishments where raw or undercooked animal foods or ingredients are sold or served for human consumption in a raw or undercooked form. This includes all types of retail food establishments whenever there is a reasonable likelihood that the food will be consumed without subsequent, thorough cooking, such as restaurants, raw bars, quick-service operations, carry-outs, and sites where groceries are obtained that have operations, such as delicatessens or seafood departments.

A. “Otherwise Processed to Eliminate Pathogens”:

This phrase is included in section 196 to encompass new technologies and pathogen control/reduction regimens as they are developed and validated as fulfilling a specific performance standard for pathogens of concern. Pasteurization of milk is an example of a long-standing validated process. For purposes of the Rule, the level of pathogen reduction that is required before a raw or undercooked animal food is allowed to be offered without a consumer advisory must be equivalent to the levels provided by section 182 for the type of food being prepared.

The absorbed dose levels of radiation approved by FDA on December 3, 1997 for red meat are insufficient to reduce the level of most vegetative pathogens to a point that is equivalent to the reductions achieved in section 182 (a) and (b). Irradiated poultry provides a 3D kill which does not provide the level of protection of the 7D kill that results from the

cooking regimen in the Rule. Therefore, irradiated meat and poultry are not allowed to be offered in a RTE form without a consumer advisory. It is intended that future Rule revisions will address time/temperature requirements that take into consideration the pathogen reduction that occurs with irradiated foods.

Recognition of Other Processes:

Animal-derived foods may undergo validated processes that target a specific pathogen. In such instances, along with the required consumer advisory may appear additional language that accurately describes the process and what it achieves. For example, a technology for reducing *Vibrio vulnificus* in oysters to nondetectable levels has been validated. FDA concurs that shellfish subjected to that process can be labeled with a truthful claim that appropriately describes the product. That is, a statement could be made, such as “pasteurized to reduce *Vibrio vulnificus*” or “temperature treated to reduce *Vibrio vulnificus*. Such a claim must be in accordance with labeling laws and regulations, accurate, and not misleading. The claim would not, however, negate the need for a consumer advisory because the treatment only reduces the level of one pathogenic organism.

Product-Specific Advisories:

Consumer advisories may be tailored to be product-specific if a retail food establishment either has a limited menu or offers only certain animal-derived foods in a raw or undercooked RTE form. For example, a raw bar serving molluscan shellfish on the half shell, but no other raw or undercooked animal food, could elect to confine its consumer advisory to shellfish. The raw bar could also choose reminder, option #3, which would highlight the increased risk incurred when persons with certain medical conditions ingest shellfish that has not been adequately heat treated.

Terminology:

It should be noted that the actual on-site (e.g., on-the-menu) advisory language differs from the language in Rule section 196. The “Reminder“ options in section 196(c)(2) and (3) use terms for foods that are less specific than the terms used in section 196(a). That is, the words “meat” rather than “beef, lamb, and pork” and “seafood” rather than “fish are used. Categorical terms like “meat” are simpler and may be more likely used in conversation, making them suitable for purposes of a menu notice.

Milk:

The term “milk” is not mentioned in section 196 (c). The sale or transportation of final packaged form of unpasteurized milk into interstate commerce is specifically prohibited by 21 CFR 1240.61. Also the consumption of raw milk is not recommended by FDA (this statement is in the form of an official FDA position statement found at <http://www.cfsan.fda.gov/~ear/mi-03-4.html>). The sale of unpasteurized milk in intrastate commerce is prohibited in Indiana.

Molluscan Shellstock:

In addition to areas of retail food stores, such as delis in supermarkets, the consumer advisory is to be provided when a seafood department or seafood market offers raw molluscan shellstock for sale or service. There is a risk of death from *Vibrio* infections from consuming raw molluscan shellstock for persons who have certain medical conditions.

410 IAC 7-24-197 Time and temperature control of frozen food

410 IAC 7-24-198 Potentially hazardous food; slacking

410 IAC 7-24-199 Thawing of food

Freezing prevents microbial growth in foods, but usually does not destroy all microorganisms. Improper thawing provides an opportunity for surviving bacteria to grow to harmful numbers and/or produce toxins. If the food is then refrozen, significant numbers of bacteria and/or all preformed toxins are preserved.

410 IAC 7-24-200 Food contact with equipment and utensils

Pathogens can be transferred to food from utensils that have been stored on surfaces which have not been cleaned and sanitized. They may also be passed on by consumers or employees directly, or indirectly from used tableware or food containers.

Some pathogenic microorganisms survive outside the body for considerable periods of time. Food that comes into contact directly or indirectly with surfaces that are not clean and sanitized is liable to such contamination. The handles of utensils, even if manipulated with gloved hands, are particularly susceptible to contamination.

Probe-type price or identification tags are defined as a utensil. This means that if such tags are for multiuse, they must meet the applicable criteria listed in section 112 and sections 205-319. Probe-type price or product identification tags can cause microbial, chemical, or physical contamination if not properly designed, constructed, and maintained.

The Rule defines gloves as a "utensil" and therefore gloves must meet the applicable requirements related to utensil construction, cleaning, and storage.

410 IAC 7-24-201 Returned food; reservice or sale

Food can serve as a means of person-to-person transmission of disease agents, such as hepatitis A virus. Any unpackaged foods, even bakery goods in a bread basket that are not potentially hazardous and that have been served to a consumer, but not eaten, can become vehicles for transmitting pathogenic microorganisms from the initial consumer to the next if the food is served again.

410 IAC 7-24-202 Segregation of distressed merchandise

Products which are damaged, spoiled, or otherwise unfit for sale or use in a retail food establishment may become mistaken for safe and wholesome products and/or cause contamination of other foods, equipment, utensils, linens, or single-service or single-use articles. To preclude this, separate and segregated areas must be designated for storing unsalvageable goods.

410 IAC 7-24-203 Food preparation

Food preparation activities may expose food to an environment that may lead to the food's contamination. Just as food must be protected during storage, it must also be protected during preparation. Sources of environmental contamination may include splash from cleaning operations, drips from overhead air conditioning vents, or air from an uncontrolled atmosphere, such as may be encountered when preparing food in a building that is not constructed according to Rule requirements.

410 IAC 7-24-204 Miscellaneous sources of contamination

This Rule section provides a category in which to capture sources of contamination not specifically delineated in sections 151, 168, 170-178, 180, 196, 200, 201, 203, 234, 236, 245, 246, 249, and 260. Prior rules had such a provision for addressing food contamination for reasons other than those elsewhere specified. Regardless of its specificity, a rule can not anticipate all the diverse means by which food can become contaminated after receipt.

EQUIPMENT, UTENSIL, LINEN, SINGLE-USE & SINGLE-SERVICE ITEMS

410 IAC 7-24-205 Characteristics of materials for utensils and food-contact surfaces

Multiuse equipment is subject to deterioration because of its nature, i.e., intended use over an extended period of time. Certain materials allow harmful chemicals to be transferred to the food being prepared which could lead to foodborne illness. In addition, some materials can affect the taste of the food being prepared. Surfaces that are unable to be

routinely cleaned and sanitized because of the materials used could harbor foodborne pathogens. Deterioration of the surfaces of equipment, such as pitting may inhibit adequate cleaning of the surfaces of equipment, so that food prepared on or in the equipment becomes contaminated.

Inability to effectively wash, rinse and sanitize the surfaces of food equipment may lead to the buildup of pathogenic organisms transmissible through food. Studies regarding the rigor required to remove biofilms from smooth surfaces highlight the need for materials of optimal quality in multiuse equipment.

Materials that are used in the construction of utensils and food-contact surfaces of equipment may not allow the migration of deleterious substances or impart colors, odors, or tastes to food and under normal use conditions

410 IAC 7-24-206 Cast iron; use limitation

Equipment and utensils constructed of cast iron meet the requirement of durability as intended in section 205. However, the surface characteristics of cast iron tend to be somewhat porous which renders the material difficult to clean. On the other hand, when cast iron use is limited to cooking surfaces the residues in the porous surface are not of significant concern as heat destroys potential pathogens that may be present.

410 IAC 7-24-207 Lead in ceramic, china, and crystal utensils; use limitation

410 IAC 7-24-211 Lead in pewter alloys; use limitation

410 IAC 7-24-212 Lead in solder and flux; use limitation

Historically, lead has been used in the formulation or decoration of these types of utensils. Specifically, lead-based paints that were used to decorate the utensils, such as color glazes have caused high concentrations of lead to leach into the food they contain.

Lead poisoning continues to be an important public health concern due to the seriousness of associated medical problems. Lead poisoning is particularly harmful to the young and has caused learning disabilities and medical problems among individuals who have consumed high levels. The allowable levels of lead are specific to the type of utensil, based on the average contact time and properties of the foods routinely stored in each item listed.

FDA has established maximum levels (see FDA Compliance Policy Guide Section 545.450 Pottery (Ceramics); Imported and Domestic – Lead Contamination (CPG 7117.07) for leachable lead in ceramicware, and pieces that exceed these levels are subject to recall or other agency enforcement action. The levels are based on how frequently a piece of ceramicware is used, the type and temperature of the food it holds, and how long the food stays in contact with the piece. For example, cups, mugs, and pitchers have the most stringent action level, 0.5 ppm, because they can be expected to hold food longer, allowing more time for lead to leach. Also, a pitcher may be used to hold fruit juice. And a coffee mug is generally used every day to hold a hot acidic beverage, often several times a day.

The FDA allows use of lead glazes because they're the most durable, but regulates them tightly to ensure their safety. Commercial manufacturers employ extremely strict and effective manufacturing controls that keep the lead from leaching during use. Small potters often can't control the firing of lead glazes as well so their ceramics are more likely to leach illegal lead levels, although many do use lead-free glazes.

In 21 CFR 109.16, FDA requires high-lead-leaching decorative ceramic ware to be permanently labeled that it's not for food use and may poison food. Such items bought outside the United States may not be so labeled, potentially posing serious risk if used for food.

Pewter refers to a number of silver-gray alloys of tin containing various amounts of antimony, copper, and lead. The same concerns about the leaching of heavy metals and lead that apply to brass, galvanized metals, copper, cast iron, ceramics, and crystal also apply to pewter. As previously stated, the storage of acidic moist foods in pewter containers could result in food poisoning (heavy metal poisoning).

Solder is a material that is used to join metallic parts and is applied in the melted state to solid metals. Solder may be composed of tin and lead alloys.

410 IAC 7-24-208 Copper; use limitation

High concentrations of copper are poisonous and have caused foodborne illness. When copper and copper alloy surfaces contact acidic foods, copper may be leached into the food. Carbon dioxide may be released into a water supply because of an ineffective or nonexistent backflow prevention device between a carbonator and copper plumbing components. The acid that results from mixing water and carbon dioxide leaches copper from the plumbing components and the leachate is then transferred to beverages, causing copper poisoning. Backflow prevention devices constructed of copper and copper alloys can cause, and have resulted in, the leaching of both copper and lead into carbonated beverages.

Brass is an alloy of copper and zinc and contains lead which is used to combine the two elements. Historically, brass has been used for items, such as pumps, pipe fitting, and goblets. All 3 constituents are subject to leaching when they contact acidic foods, and food poisoning has resulted from such contact.

The steps in beer brewing include malting, mashing, fermentation, separation of the alcoholic beverage from the mash, and rectification. During mashing, it is essential to lower the pH from its normal 5.8 in order to optimize enzymatic activity. The pH is commonly lowered to 5.1-5.2, but may be adjusted to as low as 3.2. The soluble extract of the mash (wort) is boiled with hops for 1 to 22 hours or more. After boiling, the wort is cooled, inoculated with brewer's yeast, and fermented. The use of copper equipment during the pre-fermentation and fermentation steps typically result in some leaching of copper.

Because copper is an essential nutrient for yeast growth, low levels of copper are metabolized by the yeast during fermentation. However, studies have shown that copper levels above 0.2 mg/L are toxic or lethal to the yeast. In addition, copper levels as low as 3.5 mg/L have been reported to cause symptoms of copper poisoning in humans. Therefore, the levels of copper necessary for successful beer fermentation (i.e., below 0.2 mg/L) do not reach a level that would be toxic to humans.

Today, domestic beer brewers typically endeavor to use only stainless steel or stainless steel-lined copper equipment (piping, fermenters, filters, holding tanks, bottling machines, keys, etc.) in contact with beer following the hot brewing steps in the beer making process. Some also use pitch-coated oak vats or glass-lined steel vats following the hot brewing steps. Where copper equipment is not used in beer brewing, it is common practice to add copper (along with zinc) to provide the nutrients essential to the yeast for successful fermentation.

410 IAC 7-24-209 Galvanized metal; use limitation

Galvanized means iron or steel coated with zinc, a heavy metal that may be leached from galvanized containers into foods that are high in water content. The risk of leaching increases with increased acidity of foods contacting the galvanized container.

410 IAC 7-24-210 Sponges; use limitation

Sponges are difficult, if not impossible, to clean once they have been in contact with food particles and contaminants that are found in the use environment. Because of their construction, sponges provide harborage for any number and variety of microbiological organisms, many of which may be pathogenic. Therefore, sponges are to be used only where they will not contaminate cleaned and sanitized or in-use, food-contact surfaces, such as for cleaning equipment and utensils before rinsing and sanitizing.

410 IAC 7-24-213 Wood; use limitation

The limited acceptance of the use of wood as a food-contact surface is determined by the nature of the food and the type of wood used. Moist foods may cause the wood surface to deteriorate and the surface may become difficult to clean. In addition, wood that is treated with preservatives may result in illness due to the migration of the preservative chemicals to the food; therefore, only specific preservatives are allowed.

410 IAC 7-24-214 Food equipment; cutting surfaces

Cutting surfaces, such as cutting boards and blocks that become scratched and scored may be difficult to clean and sanitize.

As a result, pathogenic microorganisms transmissible through food may build up or accumulate. These microorganisms may be transferred to foods that are prepared on such surfaces.

410 IAC 7-24-215 Nonstick coatings; use limitation

Perfluorocarbon resin is a tough, nonporous and stable plastic material that gives cookware and bakeware a surface to which foods will not stick and that cleans easily and quickly. FDA has approved the use of this material as safe for food-contact surfaces. FDA has determined that neither the particles that may chip off nor the fumes given off at high temperatures pose a health hazard. However, because this nonstick finish may be scratched by sharp or rough-edged kitchen tools, the manufacturer's recommendations should be consulted and the use of utensils that may scratch, abrasive scouring pads, or cleaners avoided.

410 IAC 7-24-216 Nonfood-contact surfaces

Nonfood-contact surfaces of equipment routinely exposed to splash or food debris are required to be constructed of nonabsorbent materials to facilitate cleaning. Equipment that is easily cleaned minimizes the presence of pathogenic organisms, moisture, and debris and deters the attraction of rodents and insects.

410 IAC 7-24-217 Durability and strength of equipment and utensils

Equipment and utensils must be designed and constructed to be durable and capable of retaining their original characteristics so that such items can continue to fulfill their intended purpose for the duration of their life expectancy and to maintain their easy cleanability. If they can not maintain their original characteristics, they may become difficult to clean, allowing for the harborage of pathogenic microorganisms, insects, and rodents. Equipment and utensils must be designed and constructed so that parts do not break and end up in food as foreign objects or present injury hazards to consumers. A common example of presenting an injury hazard is the tendency for tines of poorly designed single service forks to break during use.

410 IAC 7-24-218 Repair and proper adjustment of equipment

Proper maintenance of equipment to manufacturer specifications helps ensure that it will continue to operate as designed. Failure to properly maintain equipment could lead to violations of the associated requirements of the Rule that place the health of the consumer at risk. For example, refrigeration units in disrepair may no longer be capable of properly cooling or holding PHF at safe temperatures.

The cutting or piercing parts of can openers may accumulate metal fragments that could lead to food containing foreign objects and, possibly, result in consumer injury.

Adequate cleaning and sanitization of dishes and utensils using a warewashing machine is directly dependent on the exposure time during the wash, rinse, and sanitizing cycles. Failure to meet manufacturer and the Rule requirements for cycle times could result in failure to clean and sanitize. For example, high temperature machines depend on the buildup of heat on the surface of dishes to accomplish sanitization. If the exposure time during any of the cycles is not met, the surface of the items may not reach the time-temperature parameter required for sanitization. Exposure time is also important in warewashing machines that use a chemical sanitizer since the sanitizer must contact the items long enough for sanitization to occur. In addition, a chemical sanitizer will not sanitize a dirty dish; therefore, the cycle times during the wash and rinse phases are critical to sanitization.

410 IAC 7-24-219 "V" threads use limitation

V-type threads present a surface which is difficult to clean routinely: they are not allowed on food-contact surfaces. The exception provided for hot oil cooking fryers and filtering systems based on the high temperatures that are used in

this equipment. The high temperature in effect sterilizes the equipment, including debris in the "V" threads.

410 IAC 7-24-220 Hot oil filtering equipment

To facilitate and ensure effective cleaning of this equipment, the Rule requirements in section 229 and 230 must be followed. The filter is designed to keep the oil free of undesired materials and therefore must be readily accessible for replacement. Filtering the oil reduces the likelihood that off-odors, tastes, and possibly toxic compounds may be imparted to food as a result of debris buildup. To ensure that filtering occurs, it is necessary for the filter to be accessible for replacement.

410 IAC 7-24-221 Kick plates; removable

The use of kick plates is required to allow access for proper cleaning. If kick plate design and installation does not meet the Rule requirements, debris could accumulate and create a situation that may attract insects and rodents.

410 IAC 7-24-222 Equipment openings, closures, and deflectors

Equipment openings and covers must be designed to protect stored or prepared food from contaminants and foreign matter that may fall into the food. The requirement for an opening to be flanged upward and for the cover to overlap the opening and be sloped to drain prevents contaminants, especially liquids, from entering the food-contact area.

Some equipment may have parts that extend into the food-contact areas. If these parts are not provided with a watertight joint at the point of entry into the food-contact area, liquids may contaminate the food by adhering to shafts or other parts and running or dripping into the food.

An apron on parts extending into the food-contact area is an acceptable alternative to the watertight seal. If the apron is not properly designed and installed, condensation, drips, and dust may gain access to the food.

410 IAC 7-24-223 Bearings and gearboxes; leakproof

It is not unusual for food equipment to contain bearings and gears. Lubricants necessary for the operation of these types of equipment could contaminate food or food-contact surfaces if the equipment is not properly designed and constructed.

410 IAC 7-24-224 Beverage tubing; separation

Beverage tubing and coldplate cooling devices may result in contamination if they are installed in direct contact with stored ice. Beverage tubing installed in contact with ice may result in condensate and drippage contaminating the ice as the condensate moves down the beverage tubing and ends up in the ice.

The presence of beverage tubing and/or coldplate cooling devices also presents cleaning problems. It may be difficult to adequately clean the ice bin if they are present. Because of the high moisture environment, mold and algae may form on the surface of the ice bins and any tubing or equipment stored in the bins.

410 IAC 7-24-225 Condenser unit; separation

A dust-proof barrier between a condenser and food storage areas of equipment protects food and food-contact areas from contamination by dust that is accumulated and blown about as a result of the condenser's operation.

410 IAC 7-24-226 Equipment compartments; drainage

Equipment that is subject to moisture must be designed to properly drain off any accumulation of water or other liquids to minimize the contamination of stored food products.

410 IAC 7-24-227 Fixed equipment; spacing or sealing

This section is designed to ensure that fixed equipment is installed in a way that:

1. Allows accessibility for cleaning on all sides, above, and underneath the units or minimizes the need for cleaning due to closely abutted surfaces;
2. Ensures that equipment that is subject to moisture is sealed;
3. Prevents the harborage of insects and rodents; and
4. Provides accessibility for the monitoring of pests.

410 IAC 7-24-228 Fixed equipment; elevation or sealing

The inability adequately or effectively to clean areas under equipment could create a situation that may attract insects and rodents and accumulate pathogenic microorganisms that are transmissible through food.

The effectiveness of cleaning is directly affected by the ability to access all areas to clean fixed equipment. It may be necessary to elevate the equipment. When elevating equipment is not feasible or prohibitively expensive, sealing to prevent contamination is required.

The economic impact of the requirement to elevate display units in retail food stores, coupled with the fact that the design, weight, and size of such units are not conducive to casters or legs, led to the exception for certain units located in consumer shopping areas, provided the floor under the units is kept clean. This exception for retail food store display equipment including shelving, refrigeration, and freezer units in the consumer shopping areas requires a rigorous cleaning schedule.

410 IAC 7-24-229 Cleanability of food-contact surfaces

The purpose of the requirements for multiuse food-contact surfaces is to ensure that such surfaces are capable of being easily cleaned and accessible for cleaning. Food-contact surfaces that do not meet these requirements provide a potential harbor for foodborne pathogenic organisms. Surfaces which have imperfections, such as cracks, chips, or pits allow microorganisms to attach and form biofilms. Once established, these biofilms can release pathogens to food. Biofilms are highly resistant to cleaning and sanitizing efforts. The requirement for easy disassembly recognizes the reluctance of food employees to disassemble and clean equipment if the task is difficult or requires the use of special, complicated tools.

410 IAC 7-24-230 CIP equipment

Certain types of equipment are designed to be cleaned in place (CIP) where it is difficult or impractical to disassemble the equipment for cleaning. Because of the closed nature of the system, CIP cleaning must be monitored via access points to ensure that cleaning has been effective throughout the system.

The CIP design must ensure that all food-contact surfaces of the equipment are contacted by the circulating cleaning and sanitizing solutions. Dead spots in the system, i.e., areas which are not contacted by the cleaning and sanitizing solutions, could result in the buildup of food debris and growth of pathogenic microorganisms. There is equal concern that cleaning and sanitizing solutions might be retained in the system, which may result in the inadvertent adulteration of food. Therefore, the CIP system must be self-draining.

410 IAC 7-24-231 Cleanability of can openers

Once the cutting mechanism of can openers become pitted or the surface in any way becomes uncleanable, they must be replaced because they can no longer be adequately cleaned and sanitized. Can openers must be designed to facilitate replacement.

410 IAC 7-24-232 Cleanability of nonfood-contact surfaces

Hard-to-clean areas could result in the attraction and harborage of insects and rodents and allow the growth of foodborne pathogenic microorganisms. Well-designed equipment enhances the ability to keep nonfood-contact surfaces clean.

410 IAC 7-24-233 Utensils; consumer self-service

Appropriate serving utensils provided at each container will, among other things, reduce the likelihood of food tasting, use of fingers to serve food, use of fingers to remove the remains of one food on the utensil so that it may be used for another, use of soiled tableware to transfer food, and cross contamination between foods, including a raw food to a cooked PHF

410 IAC 7-24-234 In-use utensils; between-use storage

Refer also to the public health reason for section 200.

Once a food employee begins to use a utensil, such as a ladle, spatula, or knife, that has been previously cleaned and sanitized, it is then considered an in-use utensil. In-use utensils, used on a continuous or intermittent basis during preparation or dispensing, must be cleaned and sanitized on a schedule that precludes the growth of pathogens that may have been introduced onto utensil surfaces. In-use utensils may be safely stored in hot water maintained at 135°F or above during intermittent use because microbial growth is controlled at such temperatures.

A food utensil should be designed and used to prevent bare hand contact with RTE food or to minimize contact with food that is not in a RTE form. On-site evaluations can be made to determine if a utensil is improperly designed for the task or whether a food employee is misusing an appropriately designed utensil.

410 IAC 7-24-235 Good repair and calibration

A utensil or food temperature measuring device can act as a source of contamination to the food it contacts if it is not maintained in good repair. Also, if temperature or pressure measuring devices are not maintained in good repair, the accuracy of the readings is questionable. Consequently, a temperature problem may not be detected, or conversely, a corrective action may be needlessly taken.

410 IAC 7-24-236 Linens and napkins; use limitation

Because of their absorbency, linens and napkins used as liners that contact food must be replaced whenever the container is refilled. Failure to replace such liners could cause the linens or napkins to become fomites.

410 IAC 7-24-237 Clean linens

Linens that are not free from food residues and other soiling matter may carry pathogenic microorganisms that may cause illness.

410 IAC 7-24-238 Storage of soiled linens

Soiled linens may directly or indirectly contaminate food. Proper storage will reduce the possibility of contamination of food, equipment, utensils, and single-service and single-use articles.

410 IAC 7-24-239 Equipment, utensils, and linens

These items must be stored to prevent their contamination prior to use.

The improper storage of clean and sanitized equipment, utensils, laundered linens, and single-service and single-use articles may allow contamination before their intended use. Contamination can be caused by moisture from absorption, flooding, drippage, or splash. It can also be caused by food debris, toxic materials, litter, dust, and other materials. The

contamination is often related to unhygienic employee practices, unacceptable high-risk storage locations, or improper construction of storage facilities.

410 IAC 7-24-240 Characteristics of materials used in single-service and single-use articles

The safety and quality of food can be adversely affected through single service and single use articles that are not constructed of acceptable materials. The migration of components of those materials to food they contact could result in chemical contamination and illness to the consumer. In addition, the use of unacceptable materials could adversely affect the quality of the food because of odors, tastes, and colors transferred to the food.

410 IAC 7-24-241 Single-service and single-use articles; required use

In situations in which the reuse of multiuse items could result in foodborne illness to consumers, single-service and single-use articles must be used to ensure safety.

410 IAC 7-24-242 Single-service, single-use, and shell articles; use limitation

Articles that are not constructed of multiuse materials may not be reused as they are unable to withstand the rigors of multiple uses, including the ability to be subjected to repeated washing, rinsing, and sanitizing.

The reuse of mollusk and crustacean shells as multiuse utensils is not allowed in retail food establishments. This prohibition does not apply to the removal of the oyster or other species from the shell for preparation, then returning the same animal to the same shell for service.

The shell itself may be potentially unsafe for use as a food utensil because of residues from natural and environmental contamination occurring after the mollusk or crustacean is removed. In addition, natural shells are not durable or easily cleanable as specified under section 242. When mollusk or crustacean shells (from commercial sources) are re-used by filling them with shucked shellfish, the food is considered misleading and not honestly presented.

410 IAC 7-24-243 Single-service and single-use articles

Clean equipment and multiuse utensils which have been cleaned and sanitized, laundered linens, and single-service and single-use articles can become contaminated before their intended use in a variety of ways, such as through water leakage, pest infestation, or other insanitary condition.

410 IAC 7-24-244 Storage prohibitions

The improper storage of clean and sanitized equipment, utensils, laundered linens, and single-service and single-use articles may allow contamination before their intended use. Contamination can be caused by moisture from absorption, flooding, drippage, or splash. It can also be caused by food debris, toxic materials, litter, dust, and other materials. The contamination is often related to unhygienic employee practices, unacceptable high-risk storage locations, or improper construction of storage facilities.

410 IAC 7-24-245 Wiping cloths; used for one purpose

Soiled wiping cloths, especially when moist, can become breeding grounds for pathogens that could be transferred to food. Any wiping cloths that are not dry (except those used once and then laundered) must be stored in a sanitizer solution at all times, with the proper sanitizer concentration in the solution. Wiping cloths soiled with organic material can overcome the effectiveness of, and neutralize, the sanitizer. The sanitizing solution must be changed as needed to minimize the accumulation of organic material and sustain proper concentration. Proper sanitizer concentration should be ensured by checking the solution periodically with an appropriate chemical test kit.

410 IAC 7-24-246 Gloves; use limitation

Refer also to the public health reason for section 200.

Gloves used in touching RTE food are defined as a "utensil" and must meet the applicable requirements related to utensil construction, good repair, cleaning, and storage.

Multiuse gloves, especially when used repeatedly and soiled, can become breeding grounds for pathogens that could be transferred to food. Soiled gloves can directly contaminate food if stored with RTE food or may indirectly contaminate food if stored with articles that will be used in contact with food. Multiuse gloves must be washed, rinsed, and sanitized between activities that contaminate the gloves. Hands must be washed before donning gloves. Gloves must be discarded when soil or other contaminants enter the inside of the glove. Slash-resistant gloves are not easily cleaned and sanitized. Their use with RTE foods could contaminate the food.

Natural Rubber Latex (NRL) Gloves

Natural rubber latex gloves have been reported to cause allergic reactions in some individuals who wear latex gloves during food preparation, and even in individuals eating food prepared by food employees wearing latex gloves. This information should be taken into consideration when deciding whether single-use gloves made of latex will be used during food preparation.

Although many allergic reactions occur as a result of occupational exposure, CFSAN is actively reviewing its current policy on the use of disposable NRL gloves in food operations in light of the possible transmission of the latex protein via food. To gain additional information regarding allergic reactions allegedly due to the ingestion of food contaminated by NRL in retail settings, CFSAN has been collecting reports of such reactions from consumers who have contacted FDA. Several offices within CFSAN will continue to collaborate in reviewing incoming data. The results of these activities and other related efforts will be used to determine if policy changes regarding the use of latex in food operations, based on food safety considerations, are warranted.

The FDA, Office of Food Additive Safety, Division of Food Contact Notification, reviews gloves submitted for food-contact use in the food industry on the basis of the glove's formulation or components. FDA regulates NRL gloves used for medical purposes only.

FDA is aware of the following information related to occupational hazards (not food safety hazards) associated with the use of NRL gloves:

- The National Institute for Occupational Safety and Health (NIOSH) published a 1997 Alert titled "Preventing Allergic Reactions to Natural Rubber Latex in the Workplace" (NIOSH publication number 97-135) which is found at <http://www.cdc.gov/niosh/latexalt.html>.
- The American College of Allergy, Asthma and Immunology (ACAAI) and the American Academy of Allergy Asthma and Immunology (AAAAI) issued a joint statement discouraging the routine use of NRL gloves by food handlers. (1997) <http://www.aaaai.org/public/physicians/joint.htm>
 - The AAAAI provides information on latex allergies on the web at: http://www.aaaai.org/patients/resources/fastfacts/latex_allergy.stm
 - The ACAAI provides information on latex allergies on the web at: <http://www.aaaai.org/public/facts/latex.htm>
- An OSHA Technical Information Bulletin recommends reducing allergy potential by reducing unnecessary exposure to NRL; (2008) <http://www.osha.gov/dts/shib/shib012808.html>
- OSHA addresses gloves in the following Federal regulation, which can be found at: http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9788

OSHA Regulations (Standards - 29 CFR)
Standard Number: 1910.138
Standard Title: Hand Protection.

SubPart Number: I
SubPart Title: Personal Protective Equipment

(a) General requirements. Employers shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards, such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

(b) Selection. Employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

410 IAC 7-24-247 Refilling returnables

410 IAC 7-24-248 Returnables; cleaning for refilling

410 IAC 7-24-249 Using clean tableware for second portions and refills

Refer also to the public health reason for section 200.

410 IAC 7-24-248 Returnables; cleaning for refilling

The refilling of consumer-owned beverage containers introduces the possibility of contamination of the filling equipment or product by improperly cleaned containers or the improper operation of the equipment. To prevent this contamination and possible health hazards to the consumer, the refilling of consumer-owned containers is limited to beverages that are not PHF. Equipment must be designed to prevent the contamination of the equipment and means must be provided to clean the containers at the facility.

410 IAC 7-24-250 Handling of kitchenware and tableware

410 IAC 7-24-251 Handling of soiled and clean kitchenware

410 IAC 7-24-252 Protection of preset tableware

The presentation or setting of single-service and single-use articles and cleaned and sanitized utensils shall be done in a manner designed to prevent the contamination of food- and lip-contact surfaces.

410 IAC 7-24-253 Durability and strength of food temperature measuring devices

Food temperature measuring devices that have glass sensors or stems present a likelihood that glass will end up in food as a foreign object and create an injury hazard to the consumer. In addition, the contents of the temperature measuring device, e.g., mercury, may contaminate food or utensils.

410 IAC 7-24-254 Accuracy of temperature measuring devices

The Metric Conversion Act of 1975 (amended 1988, 1996, and 2004, 15 USC 205a et seq) requires that all Federal government regulations use the Celsius scale for temperature measurement. The Fahrenheit scale is included in the Rule for those jurisdictions using the Fahrenheit scale for temperature measurement.

The small margin of error specified for thermometer accuracy is due to the lack of a large safety margin in the temperature requirements themselves. The accuracy specified for a particular food temperature measuring device is applicable to its entire range of use, that is, from refrigeration through cooking temperatures if the device is intended for such use.

410 IAC 7-24-255 Accuracy of ambient air and water temperature measuring devices

A temperature measuring device used to measure the air temperature in a refrigeration unit is not required to be as accurate as a food thermometer because the unit's temperature fluctuates with repeated opening and closing of the door and because accuracy in measuring internal food temperatures is of more significance.

The Celsius scale is the federally recognized scale based on The Metric Conversion Act of 1975 (amended 1988, 1996, and 2004, 15 USC 205a et seq) which requires the use of metric values. The " 1.5°C requirement is more stringent than the 3°F previously required since " 1.5°C is equivalent to " 2.7°F. The more rigid accuracy results from the practical application of metric equivalents to the temperature gradations of Celsius thermometers.

If Fahrenheit thermometers are used, the 3°F requirement applies because of the calibrated intervals of Fahrenheit thermometers. The accuracy specified for a particular air or water temperature measuring device is applicable to its intended range of use. For example, a cold holding unit may have a temperature measuring device that measures from a specified frozen temperature to 68°F. The device must be accurate to specifications within that use range.

410 IAC 7-24-256 Function of temperature measuring devices

The placement of the temperature measuring device is important. If the device is placed in the coldest location in the storage unit, it may not be representative of the temperature of the unit. Food could be stored in areas of the unit that exceed the Rule requirements. Therefore, the temperature measuring device must be placed in a location that is representative of the actual storage temperature of the unit to ensure that all PHF are stored at least at the minimum temperature required in section 187.

Installing an air thermometer in some open display refrigerators can be difficult without physically impairing the usability of the case and interfering with cleaning and sanitation. Use of a temperature monitoring system that uses probe-like sensors that are placed in material resembling the density of food is an acceptable alternative. Thus, the direct temperature of the substitute product is measured by use of this product mimicking method.

A permanent temperature measuring device is required in any unit storing PHF because of the potential growth of pathogenic microorganisms should the temperature of the unit exceed the Rule requirements. In order to facilitate routine monitoring of the unit, the device must be clearly visible.

The exception to requiring a temperature measuring device for the types of equipment listed is primarily due to equipment design and function. It would be difficult and impractical to permanently mount a temperature measuring device on the equipment listed. The futility of attempting to measure the temperature of unconfined air, such as with heat lamps and, in some cases, the brief period of time the equipment is used for a given food negate the usefulness of ambient temperature monitoring at that point. In such cases, it would be more practical and accurate to measure the internal temperature of the food.

The importance of maintaining PHF at the specified temperatures requires that temperature measuring devices be easily readable. The inability to accurately read a thermometer could result in food being held at unsafe temperatures.

Temperature measuring devices must be appropriately scaled per the Rule requirements to ensure accurate readings.

The required incremental gradations are more precise for food measuring devices than for those used to measure ambient temperature because of the significance at a given point in time, i.e., the potential for pathogenic growth, versus the unit's temperature. The food temperature will not necessarily match the ambient temperature of the storage unit; it will depend on many variables including the temperature of the food when it is placed in the unit, the temperature at which the unit is maintained, and the length of time the food is stored in the unit.

410 IAC 7-24-257 Food temperature measuring devices

The presence and accessibility of food temperature measuring devices is critical to the effective monitoring of food temperatures. Proper use of such devices provides the operator or PIC with important information with which to determine if temperatures should be adjusted or if foods should be discarded.

When determining the temperature of thin foods, those having a thickness less than 13 mm (1/2 inch), it is particularly important to use a temperature sensing probe designed for that purpose. Bimetal, bayonet style thermometers are not suitable for accurately measuring the temperature of thin foods, such as hamburger patties because of the large diameter of the probe and the inability to accurately sense the temperature at the tip of the probe. However, temperature

measurements in thin foods can be accurately determined using a small-diameter probe 1.5 mm (0.059 inch), or less, connected to a device, such as thermocouple thermometer.

410 IAC 7-24-258 Temperature measuring devices; manual warewashing

Water temperature is critical to sanitization in warewashing operations. This is particularly true if the sanitizer being used is hot water. The effectiveness of cleaners and chemical sanitizers is also determined by the temperature of the water used. A temperature measuring device is essential to monitor manual warewashing and ensure sanitization.

410 IAC 7-24-259 Cooling, heating, and holding capacities

The ability of equipment to cool, heat, and maintain PHF at Rule-required temperatures is critical to food safety. Improper holding and cooking temperatures continue to be major contributing factors to foodborne illness. Therefore, it is very important to have adequate hot or cold holding equipment with enough capacity to meet the heating and cooling demands of the operation.

410 IAC 7-24-260 Vended potentially hazardous food; original container

The possibility of product contamination increases whenever food is exposed. Changing the container(s) for machine vended PHF allows microbes that may be present an opportunity to contaminate the food. Pathogens could be present on the hands of the individual packaging the food, the equipment used, or the exterior of the original packaging. In addition, PHF can be vended in a hermetically sealed state to ensure product safety. Once the original seal is broken, the food is vulnerable to contamination.

410 IAC 7-24-261 Dispensing equipment; protection of equipment and food

This requirement is intended to protect both the machine-dispensed, unpackaged, liquid foods and the machine components from contamination. Barriers need to be provided so that the only liquid entering the food container is the liquid intended to be dispensed when the machine's mechanism is activated. Recessing of the machine's components and self-closing doors prevent contamination of machine ports by people, dust, insects, or rodents. If the equipment components become contaminated, the product itself will be exposed to possible contamination.

A direct opening into the food being dispensed allows dust, vermin, and other contaminants access to the food.

NSF/ANSI 18-*Manual Food and Beverage Dispensing Equipment* is the standard for manual food and beverage dispensing equipment which has been designed to maintain the safety of aseptically packaged fluid foods without refrigeration even after the hermetic seal is broken.

NSF/ANSI 18 was revised in 2006 to specifically address dispensing equipment designed to hold PHF or beverages in a homogeneous liquid form without temperature control. NSF/ANSI 18 requires that such equipment designs include a number of safeguards that prevent the contamination of specially packaged food stored within the dispensing equipment. The Standard also requires that the dispensing equipment have lockout mechanisms that preclude the dispensing of the product if such safeguards fail or if a prescribed duration of storage is exceeded. ANSI recognizes NSF/ANSI 18 as the sole national standard for the sanitary design of manual food and beverage dispensers.

410 IAC 7-24-262 Vending machine; vending stage closure

Since packaged foods dispensed from vending machines could attract insects and rodents, a self-closing door is required as a barrier to their entrance.

410 IAC 7-24-263 Can openers on vending machines

Since the cutting or piercing surfaces of a can opener directly contact food in the container being opened, these surfaces must be protected from contamination.

410 IAC 7-24-264 Vending machines; automatic shutoff

Failure to store PHF at safe temperatures in a vending machine could result in the growth of pathogenic microorganisms that may result in foodborne illness. The presence of an automatic control that prevents the vending of food if the temperature of the unit exceeds the Rule requirements precludes the vending of foods that may not be safe.

It is possible and indeed very likely that the temperature of the storage area of a vending machine may exceed the Rule requirements during the stocking and servicing of the machine. The automatic shut off, commonly referred to as the "public health control," provides a limited amount of time that the ambient temperature of a machine may exceed the Rule requirements. Strict adherence to the time requirements can limit the growth of pathogenic microorganisms.

410 IAC 7-24-265 Vending machines; liquid waste products

The presence of internal waste containers allows for the collection of liquids that spill within the vending machine. Absence of a waste container or, where required, a shut off valve which controls the incoming liquids could result in wastes spilling within the machine, causing a condition that attracts insects and rodents and compounds cleaning and maintenance problems.

410 IAC 7-24-266 Vending machine doors and openings

The objective of this requirement is to provide a barrier against the entrance into vending machines of insects, rodents, and dust. The maximum size of the openings deters the entrance of common pests.

410 IAC 7-24-267 Overhead protection on outdoor food vending areas

The potential for contamination from airborne dust and particulates or inclement weather is present in outside areas. Overhead protection minimizes the potential for contamination of food under such conditions.

410 IAC 7-24-268 Receptacles in vending machines

Refer also to public health reason for section 395.

A refuse receptacle may not be located within a vending machine, except that a receptacle for beverage bottle crown closures may be located within a vending machine.

410 IAC 7-24-269 Warewashing equipment requirements

A retail food establishment shall be equipped with at least one (1) manual ware washing equipment or a warewashing machine for purposes of washing, rinsing, and sanitizing of equipment and utensils.

410 IAC 7-24-270 Manual warewashing; sink compartment requirements

The 3 compartment requirement allows for proper execution of the 3-step manual warewashing procedure. If properly used, the 3 compartments reduce the chance of contaminating the sanitizing water and therefore diluting the strength and efficacy of the chemical sanitizer that may be used.

Alternative manual warewashing equipment, allowed under certain circumstances and conditions, must provide for accomplishment of the same 3 steps:

- Application of cleaners and the removal of soil;
- Removal of any abrasive and removal or dilution of cleaning chemicals and
- Sanitization.

Refer also to the public health reason for section 302.

410 IAC 7-24-271 Manual warewashing equipment; heaters and baskets

Hot water sanitization is accomplished in water of not less than 170°F and an integral heating device is necessary to ensure that the minimum temperature is reached.

The rack or basket is required in order to safely handle the equipment and utensils being washed and to ensure immersion. Water at this temperature could result in severe burns to employees operating the equipment.

410 IAC 7-24-272 Warewashing equipment; clean solutions

Failure to maintain clean wash, rinse, and sanitizing solutions adversely affect the warewashing operation. Equipment and utensils may not be sanitized, resulting in subsequent contamination of food.

410 IAC 7-24-273 Manual warewashing equipment; wash solution temperature

The wash solution temperature required in the Rule is essential for removing organic matter. If the temperature is below 110°F, the performance of the detergent may be adversely affected, e.g., animal fats that may be present on the dirty dishes would not be dissolved.

410 IAC 7-24-274 Manual warewashing equipment; hot water sanitization temperatures

Refer to public health reason at section 303.

If the temperature during the hot water sanitizing step is less than 170°F, sanitization will not be achieved. As a result, pathogenic organisms may survive and be subsequently transferred from utensils to food.

410 IAC 7-24-275 Manual warewashing equipment; chemical sanitization using detergent-sanitizers

Some chemical sanitizers are not compatible with detergents when a 2 compartment operation is used. When using a sanitizer that is different from the detergent-sanitizer of the wash compartment, the sanitizer may be inhibited by carry-over, resulting in inadequate sanitization.

410 IAC 7-24-276 Washing; procedures for alternative manual warewashing equipment

Some pieces of equipment are fixed or too large to be cleaned in a sink. Nonetheless, cleaning of such equipment requires the application of cleaners for the removal of soil and rinsing for the removal of abrasive and cleaning chemicals followed by sanitization.

410 IAC 7-24-277 Warewashing machine; pressure measuring devices

Flow pressure is a very important factor with respect to the efficacy of sanitization. A pressure below the design pressure results in inadequate spray patterns and incomplete coverage of the utensil surfaces to be sanitized. Excessive flow pressure will tend to atomize the water droplets needed to convey heat into a vapor mist that cools before reaching the surfaces to be sanitized.

410 IAC 7-24-278 Warewashing machine; data plate operating specifications

The data plate provides the operator with the fundamental information needed to ensure that the machine is effectively washing, rinsing, and sanitizing equipment and utensils. The warewashing machine has been tested, and the information on the data plate represents the parameters that ensure effective operation and sanitization and that need to be monitored.

410 IAC 7-24-279 Warewashing machine; internal baffles

The presence of baffles or curtains separating the various operational cycles of a warewashing machine, such as

washing, rinsing, and sanitizing are designed to reduce the possibility that solutions from one cycle may contaminate solutions in another. The baffles or curtains also prevent food debris from being splashed onto the surface of equipment that has moved to another cycle in the procedure.

410 IAC 7-24-280 Warewashing machine; temperature measuring devices

The requirement for the presence of a temperature measuring device in each tank of the warewashing machine is based on the importance of temperature in the sanitization step. In hot water machines, it is critical that minimum temperatures be met at the various cycles so that the cumulative effect of successively rising temperatures causes the surface of the item being washed to reach the required temperature for sanitization.

When chemical sanitizers are used, specific minimum temperatures must be met because the effectiveness of chemical sanitizers is directly affected by the temperature of the solution.

410 IAC 7-24-281 Warewashing machine; automatic dispensing of detergents and sanitizers

The presence of adequate detergents and sanitizers is necessary to effect clean and sanitized utensils and equipment. The automatic dispensing of these chemical agents, plus a method, such as a flow indicator, flashing light, buzzer, or visible open air delivery system that alerts the operator that the chemicals are no longer being dispensed, ensures that utensils are subjected to an efficacious cleaning and sanitizing regimen.

410 IAC 7-24-282 Warewashing machine; flow pressure device

Refer to public health reason at section 277.

Flow pressure is a very important factor impacting the efficacy of sanitization in machines that use fresh hot water at line-pressure as a final sanitization rinse. It is important that the operator be able to monitor, and the food inspector be able to check, final sanitization rinse pressure as well as machine water temperatures. ANSI/NSF Standard #3, a national voluntary consensus standard for Commercial Spray-Type Dishwashing Machines, specifies that a pressure gauge or similar device be provided on this type machine and such devices are shipped with machines by the manufacturer. Flow pressure devices installed on the upstream side of the control (solenoid) valve are subject to damage and failure due to the water hammer effect caused throughout the dishwashing period each time the control valve closes. The IPS valve provides a ready means for checking line-pressure with an alternative pressure measuring device. A flow pressure device is not required on machines that use only a pumped or recirculated sanitizing rinse since an appropriate pressure is ensured by a pump and is not dependent upon line-pressure.

410 IAC 7-24-283 Warewashing machine; manufacturer's operating instructions

To ensure properly cleaned and sanitized equipment and utensils, warewashing machines must be operated properly. The manufacturer affixes a data plate to the machine providing vital, detailed instructions about the proper operation of the machine including wash, rinse, and sanitizing cycle times and temperatures which must be achieved.

410 IAC 7-24-284 Warewashing machine; wash solution temperature

The wash solution temperature in mechanical warewashing equipment is critical to proper operation. The chemicals used may not adequately perform their function if the temperature is too low. Therefore, the manufacturer's instructions must be followed. The temperatures vary according to the specific equipment being used.

410 IAC 7-24-285 Warewashing machine; hot water sanitization temperatures

Refer to public health reason at section 303.

The temperature of hot water delivered from a warewasher sanitizing rinse manifold must be maintained according to the equipment manufacturer's specifications and temperature limits specified in this section to ensure surfaces of

multiuse utensils, such as kitchenware and tableware accumulate enough heat to destroy pathogens that may remain on such surfaces after cleaning.

The surface temperature must reach at least 160°F as measured by an irreversible registering temperature measuring device to affect sanitization. When the sanitizing rinse temperature exceeds 194°F at the manifold, the water becomes volatile and begins to vaporize reducing its ability to convey sufficient heat to utensil surfaces. The lower temperature limits of 165°F for a stationary rack, single temperature machine, and 180°F for other machines are based on the sanitizing rinse contact time required to achieve the 160°F utensil surface temperature.

410 IAC 7-24-286 Warewashing machine; sanitization pressure

If the flow pressure of the final sanitizing rinse is less than that required, dispersion of the sanitizing solution may be inadequate to reach all surfaces of equipment or utensils.

410 IAC 7-24-287 Warewashing machine; loading of soiled items

Items to be washed in a warewashing machine must receive unobstructed exposure to the spray to ensure adequate cleaning. Items which are stacked or trays which are heavily loaded with silverware cannot receive complete distribution of detergent, water, or sanitizer and cannot be considered to be clean.

410 IAC 7-24-288 Warewashing sinks and drainboards; self-draining

410 IAC 7-24-289 Drainboards

Drainboards or equivalent equipment are necessary to separate soiled and cleaned items from each other and from the food preparation area in order to preclude contamination of cleaned items and of food. Drainboards allow for the control of water running off equipment and utensils that have been washed and also allow the operator to properly store washed equipment and utensils while they air-dry.

410 IAC 7-24-290 Warewashing machine; cleaning frequency

With the passage of the Food Quality Protection Act of 1996 and the related Antimicrobial Regulation Technical Correction Act of 1998, federal regulatory responsibility for chemical hard surface sanitizers was moved from FDA (CFSAN/OFAS) to EPA (Office of Pesticides Programs, Antimicrobial Division). As a result, the relevant Federal regulation has moved from 21 CFR 178.1010 to 40 CFR 180.940.

During operation, warewashing equipment is subject to the accumulation of food wastes and other soils or sources of contamination. In order to ensure the proper cleaning and sanitization of equipment and utensils, it is necessary to clean the surface of warewashing equipment before use and periodically throughout the day.

410 IAC 7-24-291 Sanitizing solutions; testing devices

Testing devices to measure the concentration of sanitizing solutions are required for 2 reasons:

- The use of chemical sanitizers requires minimum concentrations of the sanitizer during the final rinse step to ensure sanitization; and
- Too much sanitizer in the final rinse water could be toxic.

The effectiveness of chemical sanitizers is determined primarily by the concentration and pH of the sanitizer solution. Therefore, a test kit is necessary to determine the concentration of the chemical sanitizer solution.

410 IAC 7-24-292 Warewashing machine; cleaning agents

Failure to use detergents or cleaners in accordance with the manufacturer's label instructions could create safety concerns for the employee and consumer. For example, employees could suffer chemical burns, and chemical residues could find their way into food if detergents or cleaners are used carelessly.

Equipment or utensils may not be cleaned if inappropriate or insufficient amounts of cleaners or detergents are used.

410 IAC 7-24-293 Warewashing sinks and machines; use limitation

If the wash sink is used for functions other than warewashing, such as washing wiping cloths or washing and thawing foods, contamination of equipment and utensils could occur.

410 IAC 7-24-294 Manual or machine warewashing; chemical sanitization; temperature, pH, concentration, and hardness

With the passage of the Food Quality Protection Act of 1996 and the related Antimicrobial Regulation Technical Correction Act of 1998, Federal regulatory responsibility for chemical hard surface sanitizers was moved from FDA (CFSAN/OFAS) to EPA (Office of Pesticides Programs, Antimicrobial Division). As a result, the relevant Federal regulation has moved from 21 CFR 178.1010 to 40 CFR 180.940.

The effectiveness of chemical sanitizers can be directly affected by the temperature, pH, concentration of the sanitizer solution used, and hardness of the water. All sanitizers approved for use under 40 CFR 180.940 must be used under water conditions stated on the label to ensure efficacy. Therefore, it is critical to sanitization that the sanitizers are used properly and the solutions meet the minimum standards required in the Rule.

With respect to chemical sanitization, section 294 addresses the proper make-up of the sanitizing solution, i.e., chemical concentration, pH, and temperature at the required maximum levels specified when considered together and, with respect to quaternary ammonium compounds (quats), the maximum hardness level. If these minimums (maximum hardness) are not as specified, then this provision is violated.

By contrast, section 303(b) addresses exposure time in seconds. For chemical sanitization, this section is only violated when the specified exposure time is not met.

Section 443 addresses two additional considerations. The first is whether or not the chemical agent being applied as a sanitizer is approved and listed for that use under 40 CFR 180.940. If the chemical being used is not listed, this section is violated.

The second consideration under this section is whether the product, if approved and listed, is being used in accordance with the "Limits" provided for that product under its 40 CFR 180.940 listing. The concern here is an indirect food additives concern, since chemical sanitizing solutions are not rinsed off in this country. For example, 40 CFR 180.940(a) lists several quaternary ammonium compounds as approved for "food contact surfaces in public eating places, dairy-processing equipment, and food-processing equipment and utensils," each listing adding a Limit that states, "When ready for use, the end-use concentration of all quaternary chemicals in the solution is not to exceed 200 ppm of active quaternary compound." If a food safety inspection officer determined that a solution of any of these quats was at 600 ppm, section 443 would be violated.

To summarize, a too weak sanitizing solution would be a violation of section 294. A too strong solution would be a violation of section 443. Section 441 would not be violated due to the existence of section 443 that specifically addresses the use chemical sanitizers.

410 IAC 7-24-295 Equipment food-contact surfaces, nonfood-contact surfaces, and utensils

The objective of cleaning focuses on the need to remove organic matter from food-contact surfaces so that sanitization can occur and to remove soil from nonfood contact surfaces so that pathogenic microorganisms will not be allowed to accumulate and insects and rodents will not be attracted. The presence of food debris or dirt on nonfood contact surfaces may provide a suitable environment for the growth of microorganisms which employees may inadvertently transfer to food. If these areas are not kept clean, they may also provide harborage for insects, rodents, and other pests.

410 IAC 7-24-296 Equipment food-contact surfaces and utensils; cleaning frequency
410 IAC 7-24-297 Non-potentially hazardous food contact surfaces; cleaning frequency

Microorganisms may be transmitted from a food to other foods by utensils, cutting boards, thermometers, or other food-contact surfaces. Food-contact surfaces and equipment used for PHF should be cleaned as needed throughout the day but must be cleaned no less than every 4 hours to prevent the growth of microorganisms on those surfaces.

Refrigeration temperatures slow down the generation time of bacterial pathogens, making it unnecessary to clean every four hours. However, the time period between cleaning equipment and utensils may not exceed 24 hours. A time-temperature chart is provided in section 296 (d)(2) to accommodate operations that use equipment and utensils in a refrigerated room or area that maintains a temperature between 41°F or less and 55°F.

Surfaces of utensils and equipment contacting food that is not potentially hazardous, such as iced tea dispensers, carbonated beverage dispenser nozzles, beverage dispensing circuits or lines, water vending equipment, coffee bean grinders, ice makers, and ice bins must be cleaned on a routine basis to prevent the development of slime, mold, or soil residues that may contribute to an accumulation of microorganisms. Some equipment manufacturers and industry associations, e.g., within the tea industry, develop guidelines for regular cleaning and sanitizing of equipment. If the manufacturer does not provide cleaning specifications for food-contact surfaces of equipment that are not readily visible, the PIC should develop a cleaning regimen that is based on the soil that may accumulate in those particular items of equipment.

Sanitization is accomplished after the warewashing steps of cleaning and rinsing so that utensils and food-contact surfaces are sanitized before coming in contact with food and before use.

Regarding the possible adulteration from one species of meat to another between cleaning of food-contact surfaces, USDA/FSIS does not automatically consider species adulteration as a health hazard. FSIS stated in an Advance Notice of Proposed Rulemaking that species adulteration falls into a gray area between safety and economic adulteration (65 FR 14486, March 17, 2000, Other Consumer Protection Activities). FSIS will review public comments received on the species adulteration issue and further review the scientific literature and risk assessment mechanisms before declaring species adulteration a health hazard. Meanwhile, species adulteration is generally considered by FSIS as an economic issue. However, investigations by FSIS of species adulteration incidents may include a determination regarding the impact of species adulteration as a health hazard on a case-by-case basis.

410 IAC 7-24-298 Cooking and baking equipment

Food-contact surfaces of cooking equipment must be cleaned to prevent encrustations that may impede heat transfer necessary to adequately cook food. Encrusted equipment may also serve as an insect attractant when not in use. Because of the nature of the equipment, it may not be necessary to clean cooking equipment as frequently as the equipment specified in section 296.

410 IAC 7-24-299 Dry cleaning

Dry cleaning methods are indicated in only a few operations, which are limited to dry foods that are not potentially hazardous. Under some circumstances, attempts at wet cleaning may create microbiological concerns.

410 IAC 7-24-300 Precleaning

Precleaning of utensils, dishes, and food equipment allows for the removal of grease and food debris to facilitate the cleaning action of the detergent.

Depending upon the condition of the surface to be cleaned, detergent alone may not be sufficient to loosen soil for cleaning. Heavily soiled surfaces may need to be presoaked or scrubbed with an abrasive.

410 IAC 7-24-301 Wet cleaning

Because of the variety of cleaning agents available and the many different types of soil to be removed it is not possible to recommend one cleaning agent to fit all situations. Each of the different types of cleaners works best under different

conditions (i.e., some work best on grease, some work best in warm water, others work best in hot water). The specific chemical selected should be compatible with any other chemicals to be used in the operation, such as a sanitizer or drying agent.

410 IAC 7-24-302 Rinsing procedures

It is important to rinse off detergents, abrasive, and food debris after the wash step to avoid diluting or inactivating the sanitizer.

410 IAC 7-24-303 Cleaning and sanitizing food contact surfaces

Effective sanitization procedures destroy organisms of public health importance that may be present on wiping cloths, food equipment, or utensils after cleaning, or which have been introduced into the rinse solution. It is important that surfaces be clean before being sanitized to allow the sanitizer to achieve its maximum benefit.

Efficacious sanitization depends on warewashing being conducted within certain parameters. Time is a parameter applicable to both chemical and hot water sanitization. The time hot water or chemicals contact utensils or food-contact surfaces must be sufficient to destroy pathogens that may remain on surfaces after cleaning. Other parameters, such as rinse pressure, temperature, and chemical concentration are used in combination with time to achieve sanitization.

When surface temperatures of utensils passing through warewashing machines using hot water for sanitizing do not reach the required 160°F, it is important to understand the factors affecting the decreased surface temperature. A comparison should be made between the machine manufacturer's operating instructions and the machine's actual wash and rinse temperatures and final rinse pressure. The actual temperatures and rinse pressure should be consistent with the machine manufacturer's operating instructions and within limits specified in section 285 and 286.

If either the temperature or pressure of the final rinse spray is higher than the specified upper limit, spray droplets may disperse and begin to vaporize resulting in less heat delivery to utensil surfaces. Temperatures below the specified limit will not convey the needed heat to surfaces. Pressures below the specified limit will result in incomplete coverage of the heat-conveying sanitizing rinse across utensil surfaces.

410 IAC 7-24-304 Equipment and utensils; air drying required

Items must be allowed to drain and to air-dry before being stacked or stored. Stacking wet items, such as pans prevents them from drying and may allow an environment where microorganisms can begin to grow. Cloth drying of equipment and utensils is prohibited to prevent the possible transfer of microorganisms to equipment or utensils.

410 IAC 7-24-305 Ventilation hood systems; filters

Filters or other grease extracting equipment must be designed and manufactured to facilitate easy removal and cleaning or the filtering system must be able to be cleaned in place without creating difficulty. This will prevent over accumulations from occurring by enabling the PIC to keep them clean and avoid drippage.

410 IAC 7-24-306 Ventilation hood systems; drip prevention

The dripping of grease or condensation onto food constitutes adulteration and may involve contamination of the food with pathogenic organisms. Equipment, utensils, linens, and single service and single use articles that are subjected to such drippage are no longer clean.

410 IAC 7-24-307 Ventilation hood systems; adequacy

If a ventilation system is inadequate, grease and condensate may build up on the floors, walls and ceilings of the retail food establishment, causing an insanitary condition and possible deterioration of the surfaces of walls and ceilings. The

accumulation of grease and condensate may contaminate food and food-contact surfaces as well as present a possible fire hazard.

Refer also to the public health reason for section 306.

410 IAC 7-24-308 Design of heating, ventilating, and air conditioning system vents

Heating and air conditioning system vents that are not properly designed and located may be difficult to clean and result in the contamination of food, food preparation surfaces, equipment, or utensils by dust or other accumulated soil from the exhaust vents.

410 IAC 7-24-309 Mechanical ventilation

When mechanical ventilation is necessary, it must have adequate capacity to ensure that soiling of walls, ceilings, and other equipment is minimized; obnoxious odors or toxic fumes are effectively removed; and no hazards or nuisances involving accumulation of fats, oils, and similar wastes are created.

Balancing of the exhaust and make-up air must be ensured so that the system can operate efficiently.

410 IAC 7-24-310 Cleaning ventilation systems

Both intake and exhaust ducts can be a source of contamination and must be cleaned regularly. Filters that collect particulate matter must be cleaned or changed frequently to prevent overloading of the filter. Outside areas under or adjacent to exhaust duct outlets at the exterior of the building must be maintained in a clean and sanitary manner to prevent pest attraction.

410 IAC 7-24-311 Clothes washers and dryers

To protect food, soiled work clothes or linens must be efficiently laundered. The only practical way of efficiently laundering work clothes on the premises is with the use of a mechanical washer and dryer.

Refer also to the public health reason for section 315

410 IAC 7-24-312 Specifications for laundering

Linens, cloth gloves, and cloth napkins are to be laundered between uses to prevent the transfer of pathogenic microorganisms between foods or to food-contact surfaces. The laundering of wet wiping cloths before being used with a fresh solution of cleanser or sanitizer is designed to reduce the microbiological load in the cleanser and sanitizer and thereby reduce the possible transfer of microorganisms to food and nonfood-contact surfaces.

410 IAC 7-24-313 Mechanical washing

Proper laundering of wiping cloths will significantly reduce the possibility that pathogenic microorganisms will be transferred to food, equipment, or utensils.

410 IAC 7-24-314 Use of laundry facilities

Washing and drying items used in the operation of the establishment on the premises will help prevent the introduction of pathogenic microorganisms into the environment of the retail food establishment.

410 IAC 7-24-315 Equipment, clothes washers, dryers, and storage cabinets

Food equipment and the food that contacts the equipment must be protected from sources of overhead contamination, such as leaking or ruptured water or sewer pipes, dripping condensate, and falling objects. When equipment is installed, it must be situated with consideration of the potential for contamination from such overhead sources.

If a clothes washer and dryer are installed adjacent to exposed food, clean equipment, utensils, linens, and unwrapped single-service and single-use articles, it could result in those items becoming contaminated from soiled laundry. The reverse is also true, i.e., items being laundered could become contaminated from the surrounding area if the washer and dryer are not properly located.

410 IAC 7-24-316 Wiping cloths; air drying locations

Cloths that are air-dried must be dried so that they do not drip on food or utensils and so that the cloths are not contaminated while air-drying.

410 IAC 7-24-317 Lubricants for food-contact surfaces

Food-contact surfaces must be lubricated in a manner that does not introduce contaminants to those surfaces.

410 IAC 7-24-318 Protection of equipment

Equipment must be reassembled in a way that food-contact surfaces are not contaminated.

410 IAC 7-24-319 Case lot handling equipment; moveability

Proper design of case lot handling equipment facilitates moving case lots for cleaning and for surveillance of insect or rodent activity.

WATER, PLUMBING, WATER FIXTURES AND WASTE

410 IAC 7-24-320 Water source

Water, unless it comes from a safe supply, may serve as a source of contamination for food, equipment, utensils, and hands. The major concern is that water may become a vehicle for transmission of disease organisms. Water can also become contaminated with natural or man-made chemicals. Therefore, for the protection of consumers and employees, water must be obtained from a source regulated by law and must be used, transported, and dispensed in a sanitary manner.

Bacteriological and chemical standards have been developed for public drinking water supplies to protect public health. All drinking water supplies must meet standards required by law.

410 IAC 7-24-321 System flushing and disinfection

During construction, repair, or modification, water systems may become contaminated with microbes from soil because pipes are installed underground or by chemicals resulting from soldering and welding. Floods and other incidents may also cause water to become contaminated. Chemical contaminants, such as oils may also be present on or in the components of the system. To render the water safe, the system must be properly flushed and disinfected before being placed into service.

410 IAC 7-24-322 Design, construction, and installation of approved plumbing system and cleanable fixtures

Water within a system will leach minute quantities of materials out of the components of the system. To make sure none of the leached matter is toxic or in a form that may produce detrimental effects, even through long-term use, all materials and components used in water systems must be of an approved type. New or replacement items must be tested and approved based on current standards.

Improperly designed, installed, or repaired water systems can have inherent deficiencies, such as improper access openings, dead spaces, and areas difficult or impossible to clean and disinfect. Dead spaces allow water quality to

degrade since they are out of the constant circulation of the system. Fixtures, such as warewashing sinks that are not easily cleanable may lead to the contamination of food products.

410 IAC 7-24-323 Approved plumbing system materials

Plumbing systems and hoses conveying water must be made of approved materials and be smooth, durable, nonabsorbent, and corrosion-resistant. If not, the system may constitute a health hazard because unsuitable surfaces may harbor disease organisms or it may be constructed of materials that may, themselves, contaminate the water supply.

410 IAC 7-24-324 Plumbing system maintained in good repair

Improper repair or maintenance of any portion of the plumbing system may result in potential health hazards, such as cross connections, backflow, or leakage. These conditions may result in the contamination of food, equipment, utensils, linens, or single-service or single-use articles. Improper repair or maintenance may result in the creation of obnoxious odors or nuisances, and may also adversely affect the operation of warewashing equipment or other equipment which depends on sufficient volume and pressure to perform its intended functions.

410 IAC 7-24-325 Bottled drinking water

Bottled water is obtained from a public water system or from a private source, such as a spring or well. Either means of production must be controlled by public health law to protect the consumer from contaminated water.

410 IAC 7-24-326 Nondrinking water

Retail food establishments may use nondrinking water for purposes, such as air-conditioning or fire protection. Nondrinking water is not monitored for bacteriological or chemical quality or safety as is drinking water. Consequently, certain safety precautions must be observed to prevent the contamination of food, drinking water, or food-contact surfaces. Identifying the piping designated as nondrinking waterlines and inspection for cross connections are examples of safety precautions.

410 IAC 7-24-327 Water sampling

Wells and other types of individual water supplies may become contaminated through faulty equipment or environmental contamination of ground water. Periodic sampling is required by law to monitor the safety of the water and to detect any change in quality. The controlling agency must be able to ascertain that this sampling program is active and that the safety of the water is in conformance with the appropriate standards. Laboratory results are only as accurate as the sample submitted. Care must be taken not to contaminate samples. Proper sample collection and timely transportation to the laboratory are necessary to ensure the safety of drinking water used in the establishment.

410 IAC 7-24-328 Water sample report

The most recent water sampling report must be kept on file to document a safe water supply.

410 IAC 7-24-329 Capacity

Availability of sufficient water is a basic requirement for proper sanitation within a retail food establishment. An insufficient supply of safe water will prevent the proper cleaning of items, such as equipment and utensils and of food employees' hands.

Hot water required for washing items, such as equipment and utensils and employees' hands, must be available in sufficient quantities to meet demand during peak water usage periods. Booster heaters for warewashers that use hot water for sanitizing are designed to raise the temperature of hot water to a level that ensures sanitization. If the volume of water reaching the booster heater is not sufficient or hot enough, the required temperature for sanitization can not be

reached. Manual washing of food equipment and utensils is most effective when hot water is used. Unless utensils are clean to sight and touch, they cannot be effectively sanitized.

410 IAC 7-24-330 Water pressure

Inadequate water pressure could lead to situations that place the public health at risk. For example, inadequate pressure could result in improper handwashing or equipment operation. Sufficient water pressure ensures that equipment, such as mechanical warewashers operate according to manufacturer's specifications.

410 IAC 7-24-331 Water distribution, delivery, and retention system

Inadequate water systems may serve as vehicles for contamination of food or food-contact surfaces. This requirement is intended to ensure that sufficient volumes of water are provided from supplies shown to be safe, through a distribution system which is protected.

410 IAC 7-24-332 Alternative water supply

Water from an approved source can be contaminated if inappropriately conveyed. Improperly constructed and maintained water mains, pumps, hoses, connections, and other appurtenances, as well as transport vehicles and containers, may result in contamination of safe water and render it hazardous to human health.

410 IAC 7-24-333 Ice units; separation of drains

Liquid waste drain lines passing through ice machines and storage bins present a risk of contamination due to potential leakage of the waste lines and the possibility that contaminants will gain access to the ice through condensate migrating along the exterior of the lines.

Liquid drain lines passing through the ice bin are, themselves, difficult to clean and create other areas that are difficult to clean where they enter the unit as well as where they abut other surfaces. The potential for mold and algal growth in this area is very likely due to the high moisture environment. Molds and algae that form on the drain lines are difficult to remove and present a risk of contamination to the ice stored in the bin.

410 IAC 7-24-334 Backsiphonage prevention; air gap

During periods of extraordinary demand, drinking water systems may develop negative pressure in portions of the system. If a connection exists between the system and a source of contaminated water during times of negative pressure, contaminated water may be drawn into and foul the entire system. Standing water in sinks, dipper wells, steam kettles, and other equipment may become contaminated with cleaning chemicals or food residue. To prevent the introduction of this liquid into the water supply through back siphonage, various means may be used.

The water outlet of a drinking water system must not be installed so that it contacts water in sinks, equipment, or other fixtures that use water. Providing an air gap between the water supply outlet and the flood level rim of a plumbing fixture or equipment prevents contamination that may be caused by backflow.

410 IAC 7-24-335 Backsiphonage prevention device; design standard

In some instances an air gap is not practical, such as is the case on the lower rinse arm for the final rinse of warewashers. This arm may become submerged if the machine drain becomes clogged. If this failure occurs, the machine tank would fill to the flood level rim, which is above the rinse arm. A backflow prevention device is used to avoid potential backflow of contaminated water when an air gap is not practical. The device provides a break to the atmosphere in the event of a negative pressure within the system. Minerals contained in water and solid particulate matter carried in water may coat moving parts of the device or become lodged between them over time. This may render the device inoperative. To minimize such an occurrence, only devices meeting certain standards of construction, installation, maintenance, inspection, and testing for that application may be used. The necessary maintenance can be facilitated by installing these devices in accessible locations.

410 IAC 7-24-336 Backsiphonage prevention device; when required

The delivery end of hoses attached to hose bibbs on a drinking water line may be dropped into containers filled with contaminated water or left in puddles on the floor or in other possible sources of contamination. A backflow prevention device must be installed on the hose bibb to prevent the back siphonage of contaminated liquid into the drinking water system during occasional periods of negative pressure in the water line.

410 IAC 7-24-337 Backsiphonage prevention device, carbonator

When carbon dioxide is mixed with water, carbonic acid, a weak acid, is formed. Carbonators on soft drink dispensers form such acids as they carbonate the water to be mixed with the syrups to produce the soft drinks. If carbon dioxide backs up into a copper water line, carbonic acid will dissolve some of the copper. The water containing the dissolved copper will subsequently be used in dispensing soft drinks and the first few customers receiving the drinks are likely to suffer with the symptoms of copper poisoning. An air gap or a vented backflow prevention device meeting ASSE Standard No. 1022 will prevent this occurrence, thereby reducing incidences of copper poisoning.

410 IAC 7-24-338 Backsiphonage prevention device; location

Backflow prevention devices are meant to protect the drinking water system from contamination caused by backflow. If improperly placed, backflow prevention devices will not work. If inconveniently located, these devices may not be accessed when systems are extended, altered, serviced, or replaced. Over a period of time, unserviced devices may fail and system contamination may occur.

410 IAC 7-24-339 Prohibiting a cross connection

Nondrinking water may be of unknown or questionable origin. Waste water is either known or suspected to be contaminated. Neither of these sources can be allowed to contact and contaminate the drinking water system.

410 IAC 7-24-340 Water conditioning device; design

Water conditioning devices must be designed for easy disassembly for servicing so that they can be maintained in a condition that allows them to perform the function for which they were designed.

410 IAC 7-24-341 Water conditioning device; location

When not located for easy maintenance, conditioning devices will be inconvenient to access and devices, such as filters, screens, and water softeners will become clogged because they are not properly serviced.

410 IAC 7-24-342 Hand washing facility; water temperature and flow

Warm water is more effective than cold water in removing the fatty soils encountered in kitchens. An adequate flow of warm water will cause soap to lather and aid in flushing soil quickly from the hands. ASTM Standards for testing the efficacy of handwashing formulations specify a water temperature of 100-108°F.

An inadequate flow or temperature of water may lead to poor handwashing practices by food employees. A mixing valve or combination faucet is needed to provide properly tempered water for handwashing. Steam mixing valves are not allowed for this use because they are hard to control and injury by scalding is a possible hazard.

410 IAC 7-24-343 Hand washing sinks; numbers and capacities

Because handwashing is such an important factor in the prevention of foodborne illness, sufficient facilities must be available to make handwashing not only possible, but likely.

410 IAC 7-24-344 Hand washing facility; location

Hands are a common vehicle for the transmission of pathogens to foods in an establishment. Hands can become soiled with a variety of contaminants during routine operations. Some employees are unlikely to wash their hands unless properly equipped handwashing facilities are accessible in the immediate work area. Facilities which are improperly located may be blocked by portable equipment or stacked full of soiled utensils and other items, rendering the facility unavailable for regular employee use. Nothing must block the approach to a handwashing sink thereby discouraging its use, and the facility must be kept clean and well stocked with soap and sanitary towels to facilitate frequent use.

410 IAC 7-24-345 Hand washing facility; maintenance

Facilities must be maintained in a condition that promotes handwashing and restricted for that use. Convenient accessibility of a handwashing facility encourages timely handwashing which provides a break in the chain of contamination from the hands of food employees to food or food-contact surfaces. Sinks used for food preparation and warewashing can become sources of contamination if used as handwashing facilities by employees returning from the toilet or from duties which have contaminated their hands. Handwashing facilities are critical to food protection and must be maintained in operating order at all times so they will be used.

410 IAC 7-24-346 Availability of hand washing cleanser

Hand cleanser must always be present to aid in reducing microorganisms and particulate matter found on hands.

410 IAC 7-24-347 Hand drying provisions

Provisions must be provided for hand drying so that employees will not dry their hands on their clothing or other unclean materials.

410 IAC 7-24-349 Waste receptacles for disposable towels

Waste receptacles at handwashing sinks are required for the collection of disposable towels so that the paper waste will be contained, will not contact food directly or indirectly, and will not become an attractant for insects or rodents.

410 IAC 7-24-350 Toilets and urinals

Adequate, sanitary toilet facilities are necessary for the proper disposal of human waste, which carries pathogenic microorganisms, and for preventing the spread of disease by flies and other insects.

Toilet facilities must be of sanitary design and kept clean and in good repair to prevent food contamination and to motivate employees to use sanitary practices in the establishment.

410 IAC 7-24-351 Toilet room receptacle; covered

Refer also to the public health reason for section 395.

410 IAC 7-24-352 Enclosed toilet rooms

Completely enclosed toilet facilities minimize the potential for the spread of disease by the movement of flies and other insects between the toilet facility and food preparation areas.

Toilet room doors must remain closed except during cleaning operations to prevent insect and rodent entrance and the associated potential for the spread of disease.

410 IAC 7-24-353 Toilet rooms accessibility

Toilet rooms must be conveniently accessible to food employees at all times to encourage employee use of appropriate facilities for the disposing of human wastes as needed followed by the washing of hands.

410 IAC 7-24-354 Availability of toilet tissue

To minimize hand contact with fecal waste, toilet tissue is necessary for hygienic cleaning following use of toilet facilities. Toilet tissue must be supplied to meet the demand.

410 IAC 7-24-355 Service sink

A service sink or curbed facility is required so that the cleanliness of the retail food establishment can be maintained, attractants for insects and rodents minimized, and contamination of food and equipment by accumulated soil prevented. Liquid wastes generated during cleaning must be disposed of in a sanitary manner to preclude contamination of food and food equipment. A service sink is provided to prevent the improper disposal of wastes into other sinks, such as food preparation and handwashing sinks.

Mop water and similar liquid wastes are contaminated with microorganisms and other filth. Waste water must be disposed of in a sanitary manner that will not contaminate food or food equipment. A service sink or curbed cleaning facility with a drain allows for such disposal.

410 IAC 7-24-356 Scheduling inspection and service for a water system device

Water system devices, such as filters and backflow preventers, are affected by the water in the system. How devices are affected depends on water quality, especially pH, hardness, and suspended particulate matter in the water. Complexity of the device is also a factor. Manufacturer recommendations, as well as inspection and maintenance schedules for these devices, must be strictly followed to prevent failure during operation.

410 IAC 7-24-357 Water reservoir of fogging devices; cleaning

Water reservoirs that have poor water exchange rates, such as reservoirs for some humidifiers or aerosol or fogging devices, and that are directly or indirectly open to the atmosphere, may be contaminated with respiratory pathogens, such as *Legionella pneumophila*. This organism is extremely infectious and can be transmitted through very small droplets of a fogger or humidifier. It is important that the manufacturer's cleaning and maintenance schedule be scrupulously followed to prevent a reservoir from colonization by this bacterium.

410 IAC 7-24-358 Mobile water tank and mobile retail food establishment water tank materials

Materials used in the construction of a mobile water tank are affected by the water they contact. Tank liners may deteriorate and flake. Metals or platings can be toxic. To prevent the degradation of the quality of the water, it is important that the materials used in the construction of the tank are suitable for such use.

410 IAC 7-24-359 Enclosed system; sloped to drain

410 IAC 7-24-360 Inspection and cleaning port; protected and secured

The tank must be a closed system from the filling inlet to the outlet to prevent contamination of water. It is important that the bottom of the tank be sloped to the outlet to allow the tank to drain completely, to facilitate the proper cleaning and disinfection of the tank, and to prevent the retention of water or solutions after cleaning.

Some tanks are designed with an access opening to facilitate the cleaning and servicing of the water tank. The access must be constructed to prevent the opening from becoming a source of contamination of the water.

410 IAC 7-24-361 “V” type threads; use limitation

V-type threads are difficult to clean if contaminated with food or waste. To prevent the contamination of the drinking water, this type of thread should only be used on water tank inlets and outlets if the connection is permanent which eliminates exposed, difficult-to-clean threads.

410 IAC 7-24-362 Tank vent; protected

Water tanks are equipped with a vent to preclude distortion during filling or draining. The vent should be equipped with a suitable screen or filter to protect the tank against the entry of insects or other vermin that may contaminate the water supply.

410 IAC 7-24-363 Inlet and outlet; sloped to drain

Both the inlet and outlet must be sloped to drain to prevent the pooling of possibly contaminated water or sanitizing solution.

410 IAC 7-24-364 Hose; construction and identification

Hoses used to fill potable water tanks should be dedicated for that one task and should be identified for that use only to prevent contaminating the water. Hoses must be made of a material that will not leach detrimental substances into the water.

410 IAC 7-24-365 Filter; compressed air

Compressor pistons are lubricated with oil to minimize wear. Some of the oil is carried into the air lines and if not intercepted may contaminate the tank and water lines.

410 IAC 7-24-366 Protective cover or device

Protective equipment provided for openings of the water supply must be in use to prevent contamination which may be present where the supply is exposed to the environment, i.e., at water inlets or outlets or the ends of transfer hoses.

410 IAC 7-24-367 Mobile retail food establishment’s water tank inlet

Mobile units may be particularly vulnerable to environmental contamination if soiled hose connections are coupled to the tank inlet.

410 IAC 7-24-368 System flushing and disinfection

Contaminants of various types may be introduced into a water system during construction or repair or other incidents. The system must be flushed and sanitized after maintenance and before it is placed into service to prevent contamination of the water introduced into the tank.

410 IAC 7-24-369 Using a pump and hoses; backsiphonage prevention

When a water system includes a pump, or a pump is used in filling a water tank, care must be taken during hookup to prevent negative pressure on the supplying water system. Backflow prevention to protect the water supply is especially necessary during cleaning and sanitizing operations on a mobile system.

410 IAC 7-24-370 Protecting inlet, outlet, and hose fitting

When not connected for use, water inlets, outlets, and hose fittings should be closed to the environment. Unless capped or otherwise protected, filling inlets, outlets, and hoses may become contaminated by dust or vermin.

410 IAC 7-24-371 Water tank, pump, and hoses dedication

Hoses, pumps, and tanks used for food or water may not be used for other liquids because this may contaminate the water supply. If a hose, tank, or pump has been used to transfer liquid food, the equipment must be cleaned and sanitized before using it for water delivery. Failure to properly clean and sanitize the equipment would introduce nutrients, and possibly bacteria, into the water as well as inactivate residual chlorine from public water supplies.

410 IAC 7-24-372 Sewage holding tank of mobile retail food establishment; capacity and drainage

Liquid waste from a mobile or temporary retail food establishment must be stored in a properly constructed waste tank to discourage the attraction of flies and other vermin. The waste tank must be 15% larger than the water storage tank to allow for storage of wastes and used water from the drinking water supply tank. The drain from the waste tank must be larger than the filling hose to prevent the use of the drinking water filling hose to drain the waste tank.

410 IAC 7-24-374 Establishment drainage systems

The drainage system must be designed and installed properly to prevent the backup of sewage and the possible contamination of foods or food-contact surfaces in the establishment.

410 IAC 7-24-373 Removing mobile retail food establishment wastes

410 IAC 7-24-375 Conveying sewage

Improper disposal of waste provides a potential for contamination of food, utensils, and equipments and, therefore may cause serious illness or disease outbreaks. Proper removal is required to prevent contamination of ground surfaces and water supplies, or creation of other insanitary conditions that may attract insects and other vermin.

410 IAC 7-24-376 Approved sewage disposal system

Many diseases can be transmitted from one person to another through fecal contamination of food and water. This transmission can be indirect. Proper disposal of human wastes greatly reduces the risk of fecal contamination. This Rule provision is intended to ensure that wastes will not contaminate ground surfaces or water supplies; pollute surface waters; be accessible to children or pets; or allow rodents or insects to serve as vectors of disease from this source.

410 IAC 7-24-377 Direct connection, prohibited

Improper plumbing installation or maintenance may result in potential health hazards, such as cross connections, backsiphonage or backflow. These conditions may result in the contamination of food, utensils, equipment, or other food-contact surfaces. It may also adversely affect the operation of equipment, such as warewashing machines.

The exception in section 377(b) allows for a direct connection to the sanitary sewer system for floor drains originating in refrigerated spaces that are constructed as an integral part of the building structure. Examples of refrigerated spaces that are considered an integral part of the building include refrigerated prep rooms, meat cutting rooms, and refrigerated storage rooms. The exception specifically targets refrigerated spaces that are considered an integral part of the building. It does not apply to prefabricated walk-in refrigerators and freezers with prefabricated floors. It is not intended to apply to pieces of equipment, including those which may be located in a refrigerated room and which indirectly drain to a floor drain within the room. Drainage from equipment is addressed under section 377(a).

410 IAC 7-24-378 Grease trap

Failure to locate a grease trap so that it can be properly maintained and cleaned could result in the harborage of vermin and/or the failure of the sewage system.

410 IAC 7-24-379 Flushing a waste retention tank

Thoroughly flushing the liquid waste retention tank will prevent the buildup of deposits within the tank which could affect the proper operation of the tank.

410 IAC 7-24-380 Other liquid wastes and rainwater

Liquid food wastes and rainwater can provide a source of bacterial contamination and support populations of pests. Proper storage and disposal of wastes and drainage of rainwater eliminate these conditions.

410 IAC 7-24-381 Refuse, recyclables, and returnables; indoor storage area

410 IAC 7-24-382 Outdoor storage surface; refuse, recyclables, and returnables

410 IAC 7-24-383 Outdoor enclosure; refuse, recyclables, and returnables

410 IAC 7-24-384 Receptacles

410 IAC 7-24-385 Outside receptacles

410 IAC 7-24-386 Storage areas, rooms, and receptacles; capacity and availability

410 IAC 7-24-387 Cleaning implements and supplies

410 IAC 7-24-388 Storage areas, redeeming machines, receptacles, and waste handling units; location

410 IAC 7-24-389 Storing refuse, recyclables, and returnables

410 IAC 7-24-390 Storage areas, enclosures, and receptacles; good repair

410 IAC 7-24-391 Outside storage prohibitions

410 IAC 7-24-392 Covering receptacles

410 IAC 7-24-393 Using drain plugs

410 IAC 7-24-394 Maintaining refuse areas and enclosures

410 IAC 7-24-395 Cleaning receptacles

Proper storage and disposal of garbage and refuse are necessary to minimize the development of odors, prevent such waste from becoming an attractant and harborage or breeding place for insects and rodents, and prevent the soiling of food preparation and food service areas. Improperly handled garbage creates nuisance conditions, makes housekeeping difficult, and may be a possible source of contamination of food, equipment, and utensils.

Storage areas for garbage and refuse containers must be constructed so that they can be thoroughly cleaned in order to avoid creating an attractant or harborage for insects or rodents. In addition, such storage areas must be large enough to accommodate all the containers necessitated by the operation in order to prevent scattering of the garbage and refuse.

All containers must be maintained in good repair and cleaned as necessary in order to store garbage and refuse under sanitary conditions as well as to prevent the breeding of flies.

Garbage containers should be available wherever garbage is generated to aid in the proper disposal of refuse.

Outside receptacles must be constructed with tight-fitting lids or covers to prevent the scattering of the garbage or refuse by birds, the breeding of flies, or the entry of rodents. Proper equipment and supplies must be made available to accomplish thorough and proper cleaning of garbage storage areas and receptacles so that unsanitary conditions can be eliminated.

Waste materials and empty product containers are unclean and can be an attractant to insects and rodents. Food, equipment, utensils, linens, and single-service and single-use articles must be protected from exposure to filth and unclean conditions and other contaminants. The Rule provision in section 388 addresses these concerns by requiring the facility to be segregated, to be located to allow cleaning of adjacent areas, and to preclude creation of a nuisance.

410 IAC 7-24-396 Frequency

410 IAC 7-24-397 Receptacles or vehicles

Refuse, recyclables, and returnable items, such as beverage cans and bottles, usually contain a residue of the original contents. Spillage from these containers soils receptacles and storage areas and becomes an attractant for insects, rodents, and other pests. The handling of these materials entails some of the same problems and solutions as the

handling of garbage and refuse. Problems are minimized when all of these materials are removed from the premises at a reasonable frequency.

410 IAC 7-24-398 Community or individual facility

Alternative means of solid waste disposal must be conducted properly to prevent environmental consequences and the attraction of insects, rodents, and other pests.

PHYSICAL FACILITIES

410 IAC 7-24-399 Surface characteristics of materials for indoor area construction and repair

Floors, walls, and ceilings that are constructed of smooth and durable surface materials are more easily cleaned. Floor surfaces that are graded to drain and consist of effectively treated materials will prevent contamination of foods from dust and organisms from pooled moisture. The special requirements for carpeting materials and nonabsorbent materials in areas subject to moisture are intended to ensure that the cleanability of these surfaces is retained. Although food served from temporary retail food establishments is subject to the same potential for contamination as food served in permanent establishments, the limited capabilities and short duration of operation are recognized by less stringent requirements for surface characteristics.

410 IAC 7-24-400 Surface characteristics of materials for outdoor area construction and repair

The requirements concerning surface characteristics of outdoor areas are intended to facilitate maintenance and minimize the accumulation of dust and mud on walking and driving areas, provide durable exterior building surfaces, and prevent the attracting, harboring, or breeding of insects, rodents, and other pests where refuse, recyclables, or returnables are stored.

410 IAC 7-24-401 Installation and restrictions of floor carpeting

Requirements and restrictions regarding floor carpeting are intended to ensure that regular and effective cleaning is possible and that insect harborage is minimized. The restrictions for areas not suited for carpeting materials are designed to ensure cleanability of surfaces where accumulation of moisture or waste is likely.

410 IAC 7-24-402 Cleanability of floors, walls, and ceilings

410 IAC 7-24-403 Cleanability of floors, walls, and ceilings relative to utility lines

Floors that are of smooth, durable construction and that are nonabsorbent are more easily cleaned. Requirements and restrictions regarding floor coverings, utility lines, and floor/wall junctures are intended to ensure that regular and effective cleaning is possible and that insect and rodent harborage is minimized.

410 IAC 7-24-404 Cleanability of floors and wall junctures; coved, and closed or sealed

When cleaning is accomplished by spraying or flushing, coving and sealing of the floor/wall junctures is required to provide a surface that is conducive to water flushing. Grading of the floor to drain allows liquid wastes to be quickly carried away, by preventing pooling which could attract pests, such as insects and rodents or contribute to problems with certain pathogens, such as *Listeria monocytogenes*.

410 IAC 7-24-405 Cleaning floors; dustless methods

Dustless floor cleaning methods must be used so that food; equipment, utensils, and linens; and single-service and single-use articles are not contaminated.

410 IAC 7-24-406 Mats and duckboards as floor coverings

Requirements regarding mats and duckboards are intended to ensure that regular and effective cleaning is possible and that accumulation of dirt and waste is prevented.

410 IAC 7-24-407 Wall and ceiling coverings and coatings

410 IAC 7-24-408 Wall and ceiling attachments

410 IAC 7-24-409 Exposure of wall and ceiling studs, joists, and rafters

Walls and ceilings that are of smooth construction, nonabsorbent, and in good repair can be easily and effectively cleaned. Special requirements related to the attachment of accessories and exposure of wall and ceiling studs, joists, and rafters are intended to ensure the cleanability of these surfaces.

410 IAC 7-24-410 Functionality of light bulbs and protective shielding

Shielding of light bulbs helps prevent breakage. Light bulbs that are shielded, coated, or otherwise shatter-resistant are necessary to protect exposed food, clean equipment, utensils and linens, and unwrapped single-service and single-use articles from glass fragments should the bulb break.

410 IAC 7-24-411 Lighting intensity

Lighting levels are specified so that sufficient light is available to enable employees to perform certain functions, such as reading labels; discerning the color of substances; identifying toxic materials; recognizing the condition of food, utensils, and supplies; and safely conducting general retail food establishment operations and clean-up. Properly distributed light makes the need for cleaning apparent by making accumulations of soil conspicuous.

410 IAC 7-24-412 Design and installation of insect control devices

Insect electrocution devices are considered supplemental to good sanitation practices in meeting the Rule requirement for controlling the presence of flies and other insects in a retail food establishment.

Improper design of the device and dead insect collection tray could allow dead insect parts and injured insects to escape, rendering the device itself a source of contamination.

Exposed food and food-contact surfaces must be protected from contamination by insects or insect parts. Installation of the device over food preparation areas or in close proximity to exposed food and/or food-contact surfaces could allow dead insects and/or insect parts to be impelled by the electric charge, fall, or be blown from the device onto food or food-contact surfaces.

410 IAC 7-24-413 Protected outer openings

Insects and rodents are vectors of disease-causing microorganisms which may be transmitted to humans by contamination of food and food-contact surfaces. The presence of insects and rodents is minimized by protecting outer openings to the retail food establishment.

In the National Fire Protection Association's NFPA 101, Life Safety Code 7, 2003 Edition, doors to exit enclosures, such as stairs, horizontal exits, or exit passageways are required to be self-closing. The Life Safety Code does not require exterior doors used only as emergency exits to be self-closing, but they can be.

The intent of section 413 (a) (3) is to protect retail food establishments from the entry of insects and rodents by keeping doors closed when not in use. Self-closing devices allow a door to return to its closed position after use. If an exterior door is not routinely used for entry or exit because its use is restricted by the fire protection authority for emergency use only, it is not a portal for the entry of pests and does not need a self-closing device. Doors not requiring a self-closing device include exterior emergency exit doors that open into a public way from a fire and that meet the criteria in section 413 (c).

410 IAC 7-24-414 Protective barriers on exterior walls and roofs

Walls and roofs provide a barrier to protect the interior and foods from the weather, windblown dirt and debris, and flying insects.

410 IAC 7-24-415 Controlling pests

Insects and other pests are capable of transmitting disease to man by contaminating food and food-contact surfaces. Effective measures must be taken to control their presence in retail food establishments.

410 IAC 7-24-416 Removing dead or trapped birds insects, rodents, and other pests

Dead rodents, birds and insects must be removed promptly from the facilities to ensure clean and sanitary facilities and to preclude exacerbating the situation by allowing carcasses to attract other pests.

410 IAC 7-24-417 Designation of dressing areas or lockers

Street clothing and personal belongings can contaminate food, food equipment, and food-contact surfaces. Proper storage facilities are required for articles, such as purses, coats, shoes, and personal medications.

410 IAC 7-24-418 Designated employee areas

Because employees could introduce pathogens to food by hand-to-mouth-to-food contact and because street clothing and personal belongings carry contaminants, areas designated to accommodate employees' personal needs must be carefully located. Food, food equipment and utensils, clean linens, and single-service and single-use articles must not be in jeopardy of contamination from these areas.

410 IAC 7-24-419 Medicine restrictions and storage

Medicines that are not necessary for the health of employees present an unjustified risk to the health of other employees and consumers due to misuse and/or improper storage.

There are circumstances that require employees or children in a day care center to have personal medications on hand in the establishment. To prevent misuse, personal medications must be labeled and stored in accordance with the requirements stated for poisonous or toxic materials. Proper labeling and storage of medicines ensure that they are not accidentally misused or otherwise contaminate food or food-contact surfaces.

410 IAC 7-24-420 Refrigerated medicines; storage

Some employee medications may require refrigerated storage. If employee medications are stored in a food refrigerator, precautions must be taken to prevent the contamination of other items stored in the same refrigerator.

410 IAC 7-24-421 Storage of first aid supplies

First aid supplies for employee use must be identified and stored in accordance with the requirements of the Rule in order to preclude the accidental contamination of food, food equipment, and other food-contact surfaces.

410 IAC 7-24-422 Storage of other personal care items

Employee personal care items may serve as a source of contamination and may contaminate food, food equipment, and food-contact surfaces if they are not properly labeled and stored.

410 IAC 7-24-423 Private homes and living or sleeping quarters; use prohibited**410 IAC 7-24-424 Separation of living or sleeping quarters**

Areas or facilities that are not compatible with sanitary retail food establishment operations must be located or separated from other areas of the establishment to preclude potential contamination of food and food-contact surfaces from poisonous or toxic materials, dust or debris, the presence of improperly designed facilities and equipment, and the traffic of unauthorized and/or unnecessary persons or pets. Further, Article IV of the Amendments to the U.S. Constitution ensures the right of persons to be secure in their homes against unreasonable search and seizure. This provision could hinder the regulatory authority's access to conduct routine inspections of a retail food establishment operated in the living area of a private home. A search warrant may be the only mechanism by which to gain entry; yet, it may be difficult to obtain and might not authorize the necessary inspectional activities.

410 IAC 7-24-425 Storing maintenance tools

Brooms, mops, vacuum cleaners, and other maintenance equipment can contribute contamination to food and food-contact surfaces. These items must be stored in a manner that precludes such contamination.

To prevent harborage and breeding conditions for rodents and insects, maintenance equipment must be stored in an orderly fashion to permit cleaning of the area.

410 IAC 7-24-426 Maintaining premises of unnecessary items and litter

The presence of unnecessary articles, including equipment which is no longer used, makes regular and effective cleaning more difficult and less likely. It can also provide harborage for insects and rodents. Areas designated as equipment storage areas and closets must be maintained in a neat, clean, and sanitary manner. They must be routinely cleaned to avoid attractive or harborage conditions for rodents and insects.

410 IAC 7-24-427 Overhead protection on outdoor servicing areas

Pooled water, which may result if overhead protection is not provided for outdoor servicing areas, attracts wild animals and birds and creates a condition suitable for the breeding of insects.

410 IAC 7-24-428 Outdoor walking and driving surfaces graded to drain

If foot traffic is allowed to occur from undrained areas, contamination will be tracked into the establishment. Surfaces graded to drain minimize these conditions. Pooled water on exterior walking and driving surfaces may also attract rodents and breed insects.

410 IAC 7-24-429 Outdoor refuse areas; curbed and graded to drain

If refuse areas are not graded properly, waste water will pool and attract insects and rodents.

410 IAC 7-24-430 Repairing premises, structures, and attachments

Poor repair and maintenance compromises the functionality of the physical facilities. This requirement is intended to ensure that the physical facilities are properly maintained in order to serve their intended purpose.

410 IAC 7-24-431 Physical structures; restrictions and frequency of cleaning

Cleaning of the physical facilities is an important measure in ensuring the protection and sanitary preparation of food. A regular cleaning schedule should be established and followed to maintain the facility in a clean and sanitary manner. Primary cleaning should be done at times when foods are in protected storage and when food is not being served or prepared.

410 IAC 7-24-432 Cleaning maintenance tools and preventing contamination

Maintenance tools used to repair the physical facilities must be cleaned in a separate area to prevent contamination of food and food preparation and warewashing areas.

410 IAC 7-24-433 Drying mops

Mops can contaminate food and food preparation areas if not properly cleaned and stored after use. Mops should be cleaned and dried in a sanitary manner away from food flow areas.

410 IAC 7-24-434 Limitation of absorbent materials on floors

Cleanliness of the retail food establishment is important to minimize attractants for insects and rodents, aid in preventing the contamination of food and equipment, and prevent nuisance conditions. A clean and orderly retail food establishment is also conducive to positive employee attitudes which can lead to increased attention to personal hygiene and improved food preparation practices. Use of specified cleaning procedures is important in precluding avoidable contamination of food and equipment and nuisance conditions.

Temporary floor coverings, such as sawdust can contaminate food, attract insects and rodents, and become a nuisance to the food operation.

410 IAC 7-24-435 Animal handling prohibited

Dogs and other animals, like humans, may harbor pathogens that are transmissible through food. Handling or caring for animals that may be legally present is prohibited because of the risk of contamination of food employee hands and clothing.

410 IAC 7-24-436 Prohibiting animals

Animals carry disease-causing organisms and can transmit pathogens to humans through direct and/or indirect contamination of food and food-contact surfaces. The restrictions apply to live animals with limited access allowed only in specific situations and under controlled conditions and to the storage of live and dead fish bait. Employees with service animals are required under section 129 to wash their hands after each contact with animals to remove bacteria and soil.

Animals shed hair continuously and may deposit liquid or fecal waste, creating the need for vigilance and more frequent and rigorous cleaning efforts.

The definition for a service animal is adapted from 28 CFR 36.104 adopted pursuant to the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. 12101 et seq.). A service animal performs some of the functions that persons with a disability cannot perform for themselves, such as those provided by a “seeing eye” dog; alerting persons with hearing impairments to sounds; pulling wheelchairs or carrying and picking up things for persons with mobility impairments; and assisting persons with mobility impairments with balance.

A service animal is not considered to be a pet.

Under Title III of the ADA, privately owned businesses that serve the public are prohibited from discriminating against individuals with disabilities. The ADA requires these businesses to allow people with disabilities to bring their service animals onto business premises in whatever areas customers are generally allowed. Some, but not all, service animals wear special collars or harnesses. Some, but not all, are licensed or certified and have identification papers.

Decisions regarding a food employee or applicant with a disability who needs to use a service animal should be made on a case-by-case basis. An employer must comply with health and safety requirements, but is obligated to consider whether there is a reasonable accommodation that can be made. Guidance is available from the U.S. Department of Justice, Civil Rights Division, Disability Rights Section or the U.S. Equal Employment Opportunity Commission, the

Federal agency which has the lead in these matters, in documents, such as “Commonly Asked Questions About Service Animals in Places of Business”; “The Americans with Disabilities Act Questions and Answers”; “A Guide to Disability Rights Laws; and “Americans with Disabilities Act Title III Technical Assistance Manual, 1994 Supplement.”

The ADA Information Line is 800-514-0301 (voice) or 800-514-0383 (TDD) and at:
<http://www.usdoj.gov/crt/ada/adahom1.htm>

POISONOUS OR TOXIC MATERIALS

410 IAC 7-24-437 Identifying information on original containers

The accidental contamination of food or food-contact surfaces can cause serious illness. Prominent and distinct labeling helps ensure that poisonous and toxic materials including personal care items are properly used.

410 IAC 7-24-438 Working containers; common name

It is common practice in retail food establishments to purchase many poisonous or toxic materials including cleaners and sanitizers in bulk containers. Working containers are frequently used to convey these materials to areas where they will be used, resulting in working containers being stored in different locations in the establishment. Identification of these containers with the common name of the material helps prevent the dangerous misuse of the contents.

410 IAC 7-24-439 Separation of poisonous or toxic materials

Separation of poisonous and toxic materials in accordance with the requirements of this section ensures that food, equipment, utensils, linens, and single-service and single-use articles are properly protected from contamination. For example, the storage of these types of materials directly above or adjacent to food could result in contamination of the food from spillage.

410 IAC 7-24-440 Restriction of poisonous or toxic materials

The presence in the establishment of poisonous or toxic materials that are not required for the maintenance and operation of the establishment represents an unnecessary risk to both employees and consumers.

Preserving food safety depends in part on the appropriate and proper storage and use of poisonous or toxic materials that are necessary to the maintenance and operation of a retail food establishment. Even those that are necessary can pose a hazard if they are used in a manner that contradicts the intended use of the material as described by the manufacturer on the material's label. If additional poisonous or toxic materials are present, there is an unwarranted increased potential for contamination due to improper storage (e.g., overhead spillage that could result in the contamination of food, food-contact surfaces, or food equipment) or inappropriate application.

410 IAC 7-24-441 Conditions of poisonous or toxic materials use

Failure to properly use poisonous or toxic materials can be dangerous. Many poisonous or toxic materials have general use directions on their label. Failure to follow the stated instructions could result in injury to employees and consumers through direct contact or the contamination of food.

Particular precautions must be taken during the application of poisonous or toxic materials to prevent the contamination of food and other food-contact surfaces. Residues of certain materials are not discernible to the naked eye and present an additional risk to the employee and consumer.

Because of the toxicity of restricted use pesticides, they can only be applied by certified operators. A certified operator would be aware of the dangers involved in the contamination of food and food-contact surfaces during the application

of these materials. Improperly applied pesticides present health risks to employees as well as consumers and special precautions must be taken when restricted use pesticides are applied.

410 IAC 7-24-442 Poisonous or toxic material containers

Use of poisonous or toxic material containers to store, transport, or dispense food is prohibited because of the potential for contamination of the food. The risk of serious medical consequences to anyone consuming food stored in these containers coupled with the lack of confidence that all of the material could or would be removed in the wash and sanitizing procedures are reasons for prohibiting this practice.

410 IAC 7-24-443 Sanitizers; criteria

See explanation in section 294.

Chemical sanitizers are included with poisonous or toxic materials because they may be toxic if not used in accordance with requirements listed in the Code of Federal Regulations (CFR). Large concentrations of sanitizer in excess of the CFR requirements can be harmful because residues of the materials remain. 40 CFR 180.940 lists concentrations of sanitizers that are considered safe.

410 IAC 7-24-444 Chemicals for washing fruits and vegetables; criteria

410 IAC 7-24-445 Boiler water additives; criteria

410 IAC 7-24-446 Drying agents; criteria

If the chemical wash, boiler water additive, or drying agent used is not made up of components that are approved as food additives or generally recognized as safe, illness may result. This could be due to residues that may remain from the use of compounds, such as unrecognized drying agents. This is why only those chemicals that are listed in the CFR can be used.

Chemicals that are not listed for these uses may be submitted for review by filing a Food Additive Petition. Wash chemicals boiler water additives, and drying agents are classified as food additives because of the possibility that they may end up in food. Therefore, they are subject to review before being used or listed in the CFR.

21 CFR Section 173.315 specifically identifies chemicals that may be used in washing fruits and vegetables, but it does not specify any maximum level (200 ppm or otherwise) of chemical usage for sodium hypochlorite. FDA acknowledges the use of sodium hypochlorite on fruits and vegetables and also allows calcium hypochlorite to be used interchangeably with sodium hypochlorite under 21 CFR 173.315.

Boiler water additives that may be safely used in the preparation of steam that may contact food, and their condition of use, are identified in 21 CFR 173.310 Boiler Water Additives.

410 IAC 7-24-447 Incidental food contact with lubricants

Lubricants used on food equipment may directly or indirectly end up in the food. Therefore, the lubricants used must be approved as food additives or generally recognized as safe (GRAS) and listed in the CFR. Lubricants that are not safe present the possibility of foodborne illness if they find their way into the food.

410 IAC 7-24-448 Restricted use pesticides; criteria

410 IAC 7-24-449 Rodent bait stations

Open bait stations may result in the spillage of the poison being used. Also, it is easier for pests to transport the potentially toxic bait throughout the establishment. Consequently, the bait may end up on food-contact surfaces and ultimately in the food being prepared or served.

410 IAC 7-24-450 Use of tracking powders; pest control and monitoring

The use of tracking powder pesticides presents the potential for the powder to be dispersed throughout the establishment. Consequently, the powder could directly or indirectly contaminate food being prepared. This contamination could adversely affect both the safety and quality of the food and, therefore, tracking powder pesticides are not allowed.

410 IAC 7-24-451 Separate storage and display of poisonous or toxic materials

Poisonous or toxic materials held for sale on store shelves or stored in stock rooms present a risk of contamination of food, equipment, utensils, linens, and single-service and single-use articles if not stored properly.

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www.in.gov/isdh/21061.htm

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