LSU AgCenter Research & Extension
Sea Grant Louisiana State University

Seafood NET NEWS

LOUISIANA SEAFOOD RESOURCES SUMMER 2001

New Look For Seafood Processor News

Sorry! We are late...

It seems nothing going on since last spring; however, there are lots of things going on. New update for the FDA s HACCP Guide is available now. You will learn what changes are in the new book. Dr. Price has summarized the changes in this newsletter. Last SCP and HACCP classes in May 2001 passed, but we still remember every participants in both classes. We had several people come from different states. They are so delightful! We enjoy their participation and hope that they would gain what they wanted to learn and have learned more than what they wanted from us.

September 2001 HACCP and Sanitation Training

Our next HACCP course at LSU is September 19-21, 2001. For registration information, please go to our Web page http://www.agctr.lsu.edu/seafood/HACCP_Training_Schedule.htm or contact Dr. Vor. directly for a registration form.

Even though the Sanitation Control Procedures for Fish and Fishery Products (SCP) training is not required by the FDA s seafood HACCP regulation, it will help you understand plant sanitation and learn more how to improve the proper procedures in your plant. This course was prepared by the National Seafood Alliance and has been approved by FDA. The course will be offered on Tuesday, September 18 at LSU. You can also register on our web site at: http://www.agctr.lsu.edu/seafood/SCP_Training_Schedule.htm or contact Dr. Vor. for a registration form. You must preregister for the course. All participants will receive a training manual and a certificate of course completion from the Association of Food and Drug Officials. Please register before September 17!

Dr. Robert J. Price from the University of California at Davis will still be a special guest lecturer at both the HACCP training and the SSOP training. Dr. Price has nearly 30 years of working with the seafood industry not only in California but around the nation.

New Published FDA s Seafood HACCP Guide!

Bob Price

In June 2001, the U.S. Food and Drug Administration published the third edition of the Fish and Fisheries Products Hazards and Controls Guidance. Significant changes in guidance for seafood HACCP programs are included in almost all of the chapters and a new draft chapter has been added on Glass Inclusion.

Single copies of this guidance may be obtained as long as supplies last from FDA district offices and from:

U.S. Food and Drug Administration
Office of Seafood
200 C Street, S.W.
Washington, DC 20204
phone 202-418-3133
fax 202-418-3196

Multiple copies of this guidance may be obtained from:

Florida Sea Grant
IFAS - Extension Bookstore
University of Florida
P. O. Box 110011
Gainsville, FL 32611-0011
1-800-226-1764

This guidance also will be available electronically at: http://www.cfsan.fda.gov/~comm/haccpsea.html

New Rapid Test Kits for Microbial and Freshness Detection!!

Cox Technologies has launched new products for detecting seafood decomposition within twelve minutes. The kits are Fresh Tags® and F-1 Rapid Detection Kit.

Fresh Tags®

Color indicators on the tags that are sensitive to volatile amines produced in decomposed seafood. Volatile amines will change color of the dot on the tag when seafood is being decomposed. The sensitivity can be adjusted to signal the actual action taken with a certain type of seafood package. An early decomposition in high protein foods can be detected using F-1 Rapid Detection Kit. The kit performs a generalized test for protein breakdown. Decision point setting will rely on determination of the signal level that correlates to sensory evaluation of the decomposed product.

LumiProbe24™

This test is the solid phase sandwich hybridization with a luminescent detection technique that can be used for detection of *Listeria* and *Salmonella* in contaminated foods. It is protected from false positive and there is no requirement for PCR (Polymerase Chain Reactions) amplification step. It is able to detect a single bacterium within less than 24 hours. The protocol is currently used in the European Union (EU); however, the U.S. Food and Drug Administration has not approved this procedure.

Gene-Trak s Sequepoint™

Food Diagnostic has introduced this test for detecting *Salmonella* species, using DNA hybridization in a micro format that can be manual or automatic. This is a DNA probe assay specifically for rapid detection of *Salmonella* species in foods. Actually, this test is based on the same principle as LumiProbe24□□. It claims high sensitivity and specificity as well as flexibility and convenience.

You can get additional information about those kits

in Food Technology, July 2001, Vol. 55, pp. 68-69.

Essential Cleaning and Sanitizing!

Vor. Suvanich

An appropriate sanitation program should outline the proper time, protocols, and parameters for cleaning and sanitizing all food and non-food contact surfaces in your plant regarding food safety impact. The aim is to remove substances that microorganisms can use as food, and to reduce those microorganisms that are present to levels considered safe from a public health aspect, and to prevent their growth. Clean and sanitized equipment and surfaces should be drained dry and stored in a clean and sanitary manner until use.

Effective sanitation control procedures (SCP) indicate that the cleaning and sanitizing schedules normally involve with five steps: dry clean, pre-rinse, detergent application, post-rinse, and sanitizing. Frequency of cleaning and sanitizing must be outlined for each process line. Water chemistry and quality has tremendous effect on cleaning and sanitizing efficiency. High alkaline or high acidic water ($5.0 > pH > 8.5$) may require buffering agents. Potable water is required for cleaning and sanitizing.

An understanding of the deposits on the contact surfaces in your operation is essential in order to select the proper cleaning and sanitizing regime. Generally, acid cleaners dissolve alkaline deposits and vice versa; however, some biofilms need more complex cleaners for removal. Polyvalent salts, fats, and proteins deposits are difficult for removal. Highly alkaline detergents are used to remove fat- and protein-based deposits. Protein films need alkaline cleaners with hypochlorite added to increase wettability and suspendability of proteins.

Acid cleaners, sequestering, or chelating agents are used for difficult salt film removal. In some case, cleaners and sanitizers with strong oxidizing properties may be required for difficult biofilms removal. Enzyme-based detergents have a primary advantage in environmental concern. However, they are limited to unheated surfaces. Thermal and chemical sanitizing will be effective under certain temperature/concentration and contact time. It is important to evaluate the properties, pro, and con of each sanitizing type. There are regulations involved with the chemical sanitizers through the Environmental Protection Agency (EPA), the U.S. Food and Drug Administration (FDA), and the U.S. Department of Agriculture (USDA).

Specific types of chemical sanitizers

Chlorine-based sanitizers are typically used in food processing and handling. These types of sanitizers form hypochlorous acid in solution by pH functioning of available chlorine. FDA s maximum tolerance concentration for no-rinse application is 200 parts per million (ppm) of available chlorine. The exposure time is varied depending on the temperature, concentration, and type of chlorine compounds used. The major disadvantage is corrosiveness to metal surfaces, especially at high temperature. In addition, skin irritation and mucous membrane damage in confined areas can occur. At low pH ($pH < 4.0$), hazardous chlorine vapor (mustard gas) can be formed. Carcinogenic trihalomethanes (THMs) can also be formed under some conditions.

Iodine exists in many forms, normally with a surfactant as a carrier and so called iodophors. However, the active agent is the dissociated free iodine, which is most active at low pH. FDA s tolerance for iodine is 25 ppm. The recommended exposure time is one minute. Iodine, like chlorine, has a very broad spectrum of activity against most microorganisms, including protozoa. Iodine is less active at highly temperature as well as at high pH and vaporizes at 120 F. Iodine gas is toxic in closed environments. It also causes staining on some surfaces, especially plastics.

Quaternary Ammonium Compounds (Quats) are highly diverse due to the covalently bond alkyl groups (R-groups) which contribute to the properties of this compounds. The carbon length of R-group side chain directly impacts the sanitizing activity in Quats. They are active and stable over a broad temperature range, especially at alkaline pH. Quats are effective against bacteria (more active against to gram-positive than to gram-negative), yeasts, molds, and viruses. However, they are not active against bacteriophages. Quats generally pose little toxicity.

Acid-Anionic Sanitizers are surface-active sanitizers, which normally are inorganic acids plus a surfactant (dual function of acid rinse and sanitization). Water hardness affects their activity and disadvantages include high cost, narrow pH range (pH 2-3), excessive foam, and low activity on yeasts and molds.

Fatty-Acid Sanitizers (Carboxylic Acid Sanitizers) typically are formulated with fatty acids and other acids, such as phosphoric or organic acids, which are dual function of acid rinse and sanitization. They are less foaming and have a broad range of activity. Even though they are stable to organic matter and to high temperature, they are not effective against yeasts and molds. In addition, they have low activity above pH 3.5-4.0 and at temperature below 50 F. Another disadvantage is corrosiveness to soft metals and degradable plastic and rubber.

Peroxides (either peroxides or peroxy compounds) are divided into two groups: the inorganic group containing hydrogen peroxide (HP) and the organic group containing peroxyacetic acid (PAA) and related compounds. HP is broad spectrum with slightly higher activity against gram-negative than against gram-positive organisms. HP, in concentration above 5%, can irritate eyes and skin. PAA is stable at use strength of 100 to 200 ppm. Advantages of PAA are low corrosive, tolerance to hard water, no foam, phosphate biogradable, and biofilm removal. PAA also has high activity against both gram-positive and negative bacteria. High pH above 7-8 dramatically reduces the germicidal activity. Disadvantages are pungent odor and high toxicity at concentration equal or higher than 40%. It is also a potent oxidizer.