MILPITAS FIRE DEPARTMENT
FIRE PREVENTION DIVISION
455 E. Calaveras Blvd., Milpitas, CA 95035 (408) 586-3365, FAX (408) 586-3378

April 2, 2008

Dear Milpitas Business Owner:

This letter provides important information regarding your commercial hood fire extinguishing system. Recent changes to the 2007 California Fire Code requires all commercial hood fire extinguishing systems to meet UL 300 standards no later than the second required servicing in 2008 (servicing is required every six months). The upgrade is due to the change in cooking oils over the last few years; and that existing extinguishing agents are inefficient in extinguishing a fire with these new oils. The UL 300 compliant systems provide a greater level of fire protection, which results in a higher level of fire safety for building occupants and your business.

This notice is to inform you that if your hood suppression system is not UL 300 compliant, the system must be replaced this year. Such work shall be completed by a licensed fire suppression contractor (C-16 licensure) and requires a plan approval from the Milpitas Fire Prevention Division. Once the new system is installed, the contractor is required to perform an acceptance test witnessed by a Milpitas Fire Prevention Inspector. This requirement will be enforced during your next fire inspection. Please make sure to have the proof of compliance with the UL 300 requirements readily available for your inspection.

Posted on the Fire Department's website is more information covering this requirement.

Thank you for your cooperation in this matter. If you have any questions, please contact us at (408) 586-3365.

Sincerely,

Patricia Joki
Fire Marshal

Commercial Cooking: UL 300

A UL 300 compliant fire protection system is significantly more effective in controlling kitchen fires than systems designed to meet previous standards. Dry chemical systems and those systems that do not meet UL 300 standards **may** not provide effective fire control or extinguishment. This is due to the introduction of modern, better insulated cooking equipment, changes in cooking oils (animal fats to vegetable oils). These changes require a more effective fire protection system/agent to achieve extinguishment. Today's commercial cooking equipment, primarily deep fryers, in combination with vegetable oils cook at much higher temperatures making fires hotter and more difficult to control.

What is UL 300? UL 300 is the industry accepted standard for "Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment". Underwriters Laboratories Inc. (UL) is an independent, not-for-profit product-safety testing and certification organization.

How do I know if a system meets UL 300 standards?

According to Underwriters Laboratory, there is only one way to verify that a system meets UL 300. First, check with UL that the model number is listed as UL 300 compliant. Then, verify that all components have been installed as specified by the manufacturer's manual.

Although the verification process can be challenging, a reasonable place to start is to first look for the UL 300 label on the system's extinguishing chemical tank or cabinet.

Another indicator of a UL 300 system is the type of discharge nozzle. All UL 300 compliant systems use a wet extinguishing agent. Wet system nozzles are narrow ¾" to 1" in diameter and are typically covered with red, orange or yellow plastic caps to keep them clean. Wet chemical nozzles will be located directly over each cooking surface. Discharge nozzles for a dry chemical system (not UL compliant) are fairly large, 2" in diameter and may cover more than one cooking appliance.

The best way to know if a system meets UL 300 standards may be to ask an expert, such as the fire protection company that is providing ongoing service for this system or the company that installed it. Identifying the service provider is typically easy. A service record tag is normally attached to the manual pull box for the system. The tag will list past service dates, service schedules, as well as the name and phone number of the service provider. Contact this provider directly for confirmation.

Obvious Indicators a Fire Protection System does not meet UL 300:

- Installed prior to 11/21/1994
- No UL Label on cylinder
- Dry chemical extinguishing media
- Dry chemical discharge nozzles – large size – 2" in diameter heads
- System uses water spray to protect appliances
- System uses a single nozzle to protect multiple appliances or multiple cooking surfaces.

What if this system is not UL 300 compliant? It is the recommendation of the Nationwide Insurance Loss Control Department that a competent and licensed contractor be retained to upgrade the existing fire protection system with a system that is UL 300 compliant.

Resources: www.nfpa.org National Fire Protection Association www.ul.com Underwriters Laboratories Inc.

FEMA Recommended Decision Tree For Servicing Pre-Engineered Systems Protecting Commercial Cooking Operations

Is the Installed System a Dry Chemical or Wet Chemical?

DRY CHEMICAL

Replace the system with a new UL 300 Listed Wet Chemical System. Do not conduct a 6 year maintenance - Do not attempt to retain any existing control heads, nozzles, discharge piping, detection, or conduit per NFPA 96 - 2004 Edition. If in doubt, contact the system manufacturer for complete information concerning any components that may be able to be retained. Do not abandon in place any existing conduit, detectors or piping. All existing penetrations in the hood must be sealed per NFPA 96 - 2004 Edition.

Check with local AHJ for replacement requirements. Many jurisdictions are requiring replacement of Dry Chemical systems. Replacement requirement may be based on changes in the cooking line since the system was first installed/designed, changes in cooking media or upgrade requirements to be performed within a certain time frame.

If the system does not fall under any such local requirements, explain to the owner that original manufacturers warranty, product support and parts are no longer available. Any repairs and/or any discharge that may occur will require an immediate replacement incurring significant emergency costs and down time.

Note: If any deficiencies are found with the system and not repaired, or if the system does not conform to UL 300, the system should receive a RED TAG signifiying those findings.

WET CHEMICAL

Is the System Installed and Listed to UL 300?

NO

Either replace the system or upgrade it to a UL 300 Listed system. Check with the manufacturer to see if the system is capable of being upgraded without losing its UL Listing. Also confirm with the manufacturer what, if any, components may be retained. Manufacturers' warranties and UL Listings may be voided if existing components are retained for use with the upgraded system.

Check with local AHJ for upgrade or replacement requirements. Many jurisdictions are requiring replacement or upgrade of non-UL 300 Listed Wet Chemical systems. Upgrade or replacement requirements may need to be performed within a certain time frame. Installations which took place in 1994 and prior may require such action due to changes in the cooking line since the system was first installed/designed, changes in cooking media or cooking equipment has been replaced.

YES
(go to next question)

Is the System Properly Designed for the Hazard?

NO

Record deficiencies and submit a quote to correct them to the owner/manager. Put documentation of deficiencies along with copy of the quotation in the service file. If possible have owner/operator sign the deficiency report and your proposal. This will insure that you communicated such deficiencies. Notify the local AHJ and/or insurance company where required or deemed appropriate.

Train cooking operation personnel on how to use the system. Training should include the proper use of the K class extinguisher as required per NFPA 10.

YES

Maintain the system in accordance with NFPA 17A, NFPA 96, the manufacturer's maintenance and installation manual, and applicable Codes and Statutes.

Train cooking operation personnel on how to use the system. Training should include the proper use of the K class extinguisher as required per NFPA 10.

www.firesystemstraining.org

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Saving Lives, Protecting Property

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904.6.2 Fusible link maintenance. Fixed temperature-sensing elements shall be maintained to ensure proper operation of the system.

904.7 Foam systems. Foam-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *Title 19 California Code of Regulations, Chapter 5 and* NFPA 11, NFPA 11A and NFPA 16 and their listing.

904.7.1 System test. Foam-extinguishing systems shall be inspected and tested at intervals in accordance with *Title 19 California Code of Regulations, Chapter 5.*

904.8 Carbon dioxide systems. Carbon dioxide extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *Title 19 California Code of Regulations, Chapter 5 and* NFPA 12 and their listing.

904.8.1 System test. Systems shall be inspected and tested for proper operation at 12-month intervals.

904.8.2 High-pressure cylinders. High-pressure cylinders shall be weighed and the date of the last hydrostatic test shall be verified at 6-month intervals. Where a container shows a loss in original content of more than 10 percent, the cylinder shall be refilled or replaced.

904.8.3 Low-pressure containers. The liquid-level gauges of low-pressure containers shall be observed at one-week intervals. Where a container shows a content loss of more than 10 percent, the container shall be refilled to maintain the minimum gas requirements.

904.8.4 System hoses. System hoses shall be examined at 12-month intervals for dam[illegible]. Damaged hoses shall be replaced or tested. At five-year [illegible]rvals, all hoses shall be tested.

904.8.4.1 Test procedure. Hoses shall [illegible] tested at not less than 2,500 pounds per square inch (psi) ([illegible]238 kPa) for high-pressure systems and at not less than [illegible]0 psi (6206 kPa) for low-pressure systems.

904.8.5 Auxiliary equipment. Auxiliary and supplementary components, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, shall be manually operated at 12-month intervals to ensure that such components are in proper operating condition.

904.9 Halon systems. Halogenated extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *Title 19 California Code of Regulations, Chapter 5 and* NFPA 12A and their listing.

904.9.1 System test. Systems shall be inspected and tested for proper operation at 12-month intervals.

904.9.2 Containers. The extinguishing agent quantity and pressure of containers shall be checked at 6-month intervals. Where a container shows a loss in original weight of more than 5 percent or a loss in original pressure (adjusted for temperature) of more than 10 percent, the container shall be refilled or replaced. The weight and pressure of the container shall be recorded on a tag attached to the container.

904.9.3 System hoses. System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. At 5-year intervals, all hoses shall be tested.

904.9.3.1 Test procedure. For Halon 1301 systems, hoses shall be tested at not less than 1,500 psi (10 343 kPa) for 600 psi (4137 kPa) charging pressure systems and not less than 900 psi (6206 kPa) for 360 psi (2482 kPa) charging pressure systems. For Halon 1211 hand-hose line systems, hoses shall be tested at 2,500 psi (17 238 kPa) for high-pressure systems and 900 psi (6206 kPa) for low-pressure systems.

904.9.4 Auxiliary equipment. Auxiliary and supplementary components, such as switches, door and window releases, interconnected valves, damper releases and supplementary alarms, shall be manually operated at 12-month intervals to ensure such components are in proper operating condition.

904.10 Clean-agent systems. Clean-agent fire-extinguishing systems shall be installed, maintained, periodically inspected and tested in accordance with *Title 19 California Code of Regulations, Chapter 5 and* NFPA 2001 and their listing.

904.10.1 System test. Systems shall be inspected and tested for proper operation at 12-month intervals.

904.10.2 Containers. The extinguishing agent quantity and pressure of the containers shall be checked at 6-month intervals. Where a container shows a loss in original weight of more than 5 percent or a loss in original pressure, adjusted for temperature, of more than 10 percent, the container shall be refilled or replaced. The weight and pressure of the container shall be recorded on a tag attached to the container.

904.10.3 System hoses. System hoses shall be examined at 12-month intervals for damage. Damaged hoses shall be replaced or tested. All hoses shall be tested at 5-year intervals.

904.11 Commercial cooking systems. *Commercial cooking equipment that produces grease laden vapors shall be provided with a Type I hood, in accordance with the California Mechanical Code, and an automatic fire-extinguishing system that is listed and labeled for its intended use as follows:*

1. *Wet-chemical extinguishing system, complying with UL 300.*
2. *Carbon dioxide extinguishing systems.*
3. *Automatic fire sprinkler systems.*

All existing dry-chemical and wet-chemical extinguishing systems shall comply with UL 300, no later than the second required servicing of the system following the effective date of this section.

Exception: *Public school kitchens, without deep-fat fryers, shall be upgraded to a UL 300 compliant system during state-funded modernization projects that are under the jurisdiction of the Division of the State Architect.*

California State Fire Marshal
Information Bulletin

Issued January 31, 2008

Protection of Commercial Cooking Equipment

NFPA 13 Sprinkler System vs. UL 300 Pre-engineered Wet Chemical Systems

The use of an automatic fire sprinkler system for the protection of commercial cooking operations is permissible provided the installation is according to **2002 NFPA 13, Section 7.9 Commercial-Type Cooking Equipment and Ventilation.**, and the water spray nozzles complies with UL 199, and UL 199E for deep fat fryers.

Existing sprinkler systems protecting commercial-type cooking equipment **do not** require replacement with a UL300 compliant wet chemical system provided they complied with the applicable NFPA 13 standard at the time of installation, and were approved by the Fire Official.

> **California Fire Code 2007 edition, Section 904.11**, " *Commercial cooking equipment that produces grease laden vapors shall be provided with a Type 1 hood, in accordance with the California Mechanical Code, and an automatic fire-extinguishing system that is listed and labeled for its intended use as follows:*
>
> 1. *Wet-chemical extinguishing system, complying with UL 300.*
> 2. *Carbon dioxide extinguishing systems.*
> 3. *Automatic fire sprinkler systems.*
>
> *All existing **dry-chemical and wet-chemical** extinguishing systems shall comply with UL 300, no later than the second required servicing of the system following the effective date of this section."*

For further information concerning the State Fire Marshal's Automatic Fire Extinguishing Systems Program, please contact Supervising Deputy State Fire Marshal James Parsegian at email at james.parsegian@fire.ca.gov

For more information please visit our website http://osfm.fire.ca.gov

ISSUED: February 7, 2007

California State Fire Marshal
Information Bulletin

UL 300 - Fire Testing of Fire Extinguishing Systems for the Protection of Restaurant Cooking Areas

The Office of the State Fire Marshal has amended Section 904.11 of the 2007 California Fire Code to clarify the application of Underwriters Laboratories Standard 300 (UL 300). These Regulations become effective January 1, 2008.

At that time all new automatic fire extinguishing systems used for the protection of commercial cooking operations that produce grease laden vapors shall comply with UL 300. All existing dry chemical and wet chemical fire extinguishing systems installed for the protection of commercial cooking operations that produce grease laden vapors shall comply with UL 300, no later than the second required servicing of the system after January 1, 2008.

Exception: Public schools kitchens, without deep-fat fryers, shall be upgraded to a UL 300 compliant system during state funded modernization projects that are under the jurisdiction of the Division of the State Architect (DSA).

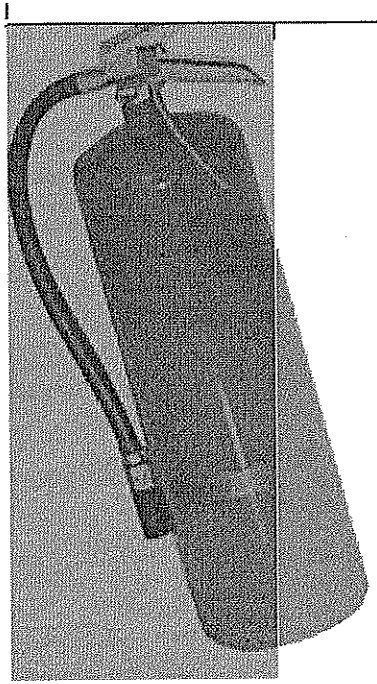
All systems shall be installed in accordance with the California Mechanical Code, 2007 edition, appropriate adopted standards, their listing and the manufacturers' installation instructions.

Exception: Factory-built commercial cooking recirculating systems that are tested, listed, labeled and installed in accordance with UL 710B and listed, labeled and installed in accordance with Section 304.1 of the California Mechanical Code 2007 edition.

The regulations requiring retroactive compliance with UL 300 for all fire suppression systems installed within a Type 1 Hood should not influence the decision to replace the hood itself, any changes required to the hood would be at the discretion of the Authority Having Jurisdiction.

If you have any questions regarding the adoption of these regulations please contact James Parsegian at james.parsegian@fire.ca.gov or (916) 445-8415.

Visit our website at: http://osfm.fire.ca.gov



UL-300 Standard Update

UL-300

On November 21, 1994, a new Underwriters Laboratories test standard entitled UL 300, Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas went into effect. This new standard is the result of changes in fire hazards involving commercial cooking equipment.

Pre-engineered chemical suppression systems were developed in the 1960's for the protection of commercial cooking equipment, plenums and ducts. Underwriter's Laboratories (UL) developed a series of fire tests for these systems designed to duplicate the potential fire hazard found in the work place. These tests established specific requirements (and limitations) affecting extinguishing agent, fire detection, piping limitations, nozzle coverage, etc., for each manufacturer who submitted its system for UL testing. Following successful completion of such tests, this data created the installation and maintenance manual for that specific manufacturer.

Fats and Temperature

At the time that these tests were developed, rendered animal fat (lard) was typically used

in commercial kitchens to fry various foods. Commercial cooking operations, appliances and supplies have changed greatly since the 1960's. Health concerns have reduced the use of lard. Efforts to cook faster have caused the use of insulated "high efficiency " fryers that heat faster and cool slower. Restaurant suppliers estimate that 70-75% of commercial kitchens use vegetable oils for frying in high-efficiency fryers.

These changes have significantly altered the fire hazard in cooking areas. Lard has a large percentage of saturated fat whereas vegetable oils have a very low percent of such fatty acids. The auto-ignition temperature of most animal fats in the 550-600 degree F. range compared to the auto-ignition temperature of most vegetable oils which is at 685 degree F. and higher.

The extinguishing agent employed in pre-engineered restaurant systems is an alkaline base. Fatty acids combine with alkalines to produce a soapy solution in process known as saponification. Thus, when a suppression system is discharged on a burning deep fat fryer containing rendered animal fat, a soap blanket is formed cutting off the oxygen supply and containing the fire until the fuel (animal fat) is cooled below its auto-ignition temperature.

A similar fire involving vegetable oils creates a different set of circumstances. With only a limited amount of fatty acids saponification is greatly reduced and the higher temperature of such fires, enhanced by the insulation in a high efficiency fryer, causes the soap blanket to break down. Thus the extinguishing capability of the fire suppression system is reduced.

Time for Change

UL recognized the need for a new set of standards for pre-engineered systems and developed its new UL 300 standard. As might be anticipated, many changes were made in the testing program. A chart comparing former tests with the new requirements is printed on the reverse of this page.

Unfortunately, UL did not require a model number change for those manufacturers who will be modifying existing system designs to comply with the new UL 300 test standard. The only requirement is the issuance of a new installation and maintenance manual containing

whatever changes and modifications found necessary for the compliance with the new standard plus the effective date of the revised publication. This could lead to some confusion because of similarities between the old and new system components.

Buyer Beware

We must assume that there will be a small number of sellers/installers who will attempt to furnish either new or used systems that were tested to the former standard. Such fire suppression systems would be inadequate to deliver the additional coverage found to be necessary for today's fire hazards.

UL-300 and the Fire Service

How can a local authority determine if the system complies with the new UL 300 standard? It is suggested that the contractor be required to include with his submittal package a copy of the manufacturer's installation and maintenance manual that would specifically indicate it is in compliance with the new standard and dated November 1994 or later.

The new UL 300 standard assures fire protection for a hazard that has gone through many changes. It presents the most significant advancements in testing of pre-engineered restaurant fire suppression systems in the past 20 years. Without careful scrutiny by local authorities such changes would have little effect if fire suppression systems are allowed to be installed under the old listings and manuals.

Final Remarks

The new UL Standard 300 addresses the problems in fire protection for commercial cooking environments which reflect changes in our diet and the way we prepare food. All of these changes have resulted in fires which are hot, stubborn and difficult to extinguish. Nozzle coverages and placement options are likely to decrease while extinguishing agent amounts increase.

Pre-engineered systems for commercial cooking operations will become more detailed,

more technical, and more expensive. They will also be safer, more reliable and perform their primary function better than ever before.

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