

**STUDY MATERIAL FOR THE  
CERTIFICATE OF FITNESS FOR  
CONSOLIDATED EXAM FOR:**

**MAINTENANCE AND TESTING OF SMOKE  
DETECTORS CITYWIDE**

**W-26**

**ALSO INCLUDED IN THIS BOOKLET YOU WILL  
FIND THE FOLLOWING:**

**1. NOTICE OF EXAMINATION (NOE)**

**REVISED 04/04/01**

## NOTICE OF EXAMINATION FOR:

**Title:** Certificate of Fitness for Maintenance of Smoke Detectors Citywide  
(W-26)

**Date of Test:** Written tests are conducted Monday to Friday (except legal holidays)  
9:00 AM to 2:30 PM.

### QUALIFICATION REQUIREMENTS

1. Applicants must be at least 18 years of age.
2. Applicants must have a reasonable understanding of the English language.
3. Applicants must present a letter of recommendation from his/her employer. The letter must be on official letterhead and must state the applicant's full name, character, physical condition, experience, and address of premises where applicant will be employed. Additionally, applicants must possess a minimum of one year of full-time experience working in the engineering/building service field. *The letter of recommendation must include a statement attesting that the employer has verified applicant's necessary experience prior to taking the exam.*  
**Self-employed applicants must submit a notarized letter.**
4. Applicants must present two (2) forms of satisfactory identification i.e., driver's license and passport picture ID.

### APPLICATION INFORMATION

Application Fees: \$25.00 for originals and \$15.00 for renewals. The fee may be paid in cash, money order, or personal check payable to New York City Fire Department. The \$25.00 fee must be payable by all applicants prior to taking the Certificate of Fitness test. Application forms and the Study Material are available at the Public Certification Unit, 1<sup>st</sup> floor, 9 MetroTech Center, Brooklyn, NY 11201.

### TEST INFORMATION

**Test:** The test will be of the written, multiple choice type. A passing score of at least 70% is required in order to secure a Certificate of Fitness. Call (718) 999-1986 for additional information and forms.

This study material will help you prepare for the examination for the Certificate of Fitness for Maintenance and Testing of Smoke Detectors. The study material includes information taken from the Fire Department Rules of the Bureau of Fire Prevention, NYFD. The study material does not contain all of the information you need to know in order to maintain and test smoke detectors. It is your responsibility to become familiar with all applicable information needed to do your job, including rules and regulations of the City of New York, even if they are not covered in this material.

All questions on the Certificate of Fitness examination are multiple choice, with four alternative answers to each question. Only one answer is correct for each question. If you do not answer a question or mark more than one alternative your answer will be scored as incorrect. A score of 70% correct is required on the examination in order to qualify for the Certificate of Fitness. Read each question carefully before marking your answer. There is no penalty for guessing.

### Sample Questions

**1. A smoke detector is a device that detects:**

- (A) visible particles of combustion only.
- (B) invisible particles of combustion only.
- (C) both visible and invisible particles of combustion.
- (D) particles of combustion with high temperatures.

The correct answer is "C". You would press "C" on your touch screen computer monitor.

**2. Smoke detectors:**

- (A) require regular cleaning and maintenance.
- (B) are used where heat detectors cannot be installed.
- (C) are usually cleaned with cleaning fluids.
- (D) all of the alternatives given are correct.

The correct answer is "A". You would press "A" on your touch screen computer monitor.

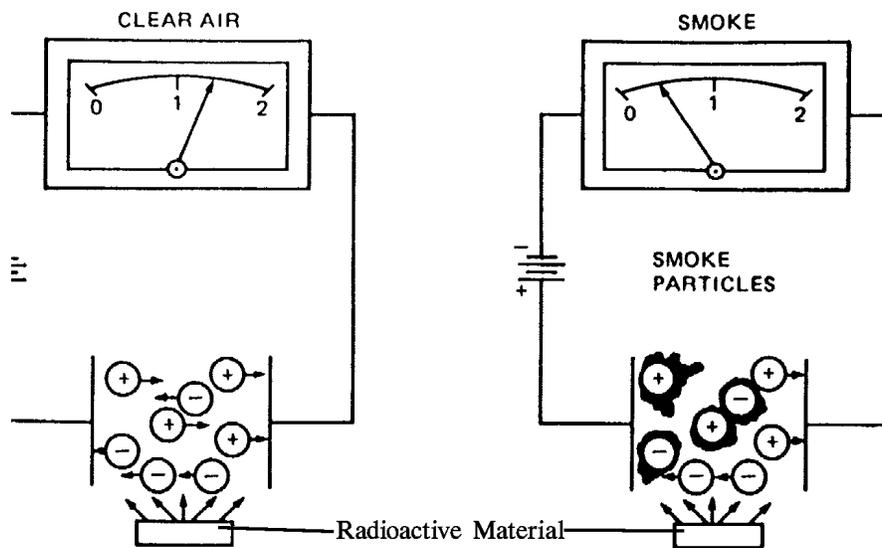
## SMOKE DETECTORS

Smoke detectors are provided on many fire alarm initiating circuits. Smoke detectors detect most fires much more rapidly than heat detectors. Smoke detectors automatically detect a fire by sensing smoke particles. The smoke particles may be visible or invisible to the human eye. The smoke detector can sense smoke particles even when they are not visible.

Smoke detectors are helpful in two very important ways. The smoke detectors can provide an early warning of the fire. They can warn of fire when the fire is still small. This makes it easier to put out the fire. Also because of the early warning occupants can evacuate a building immediately. This reduces the need for later attempts to rescue occupants who have not evacuated the building.

There are several kinds of smoke detectors. They are different in the way in which they operate. The most common smoke detectors use one of two operating principles. These are the ionization principle and the photoelectric principle.

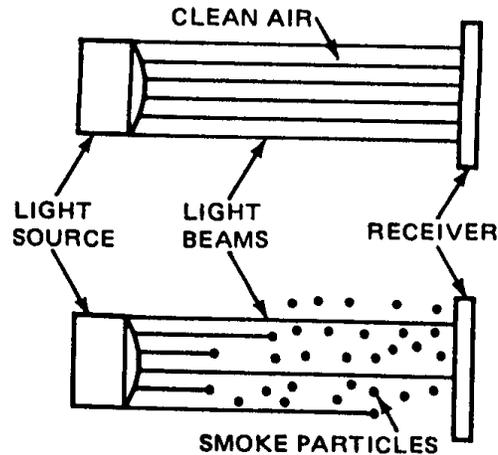
The ionization smoke detector has a small amount of radioactive material. The radioactive material ionizes the air in a sensing chamber. This makes the air conductive to electricity. A small electric current flows through the air between two charged electrodes. When smoke particles enter the sensing chamber, the flow of electric current is reduced. When the current flow reaches a set level the detector responds and an alarm is sounded. The drawing below shows the principle of operation of an ionization smoke detector.



**Ionization Smoke Detector**

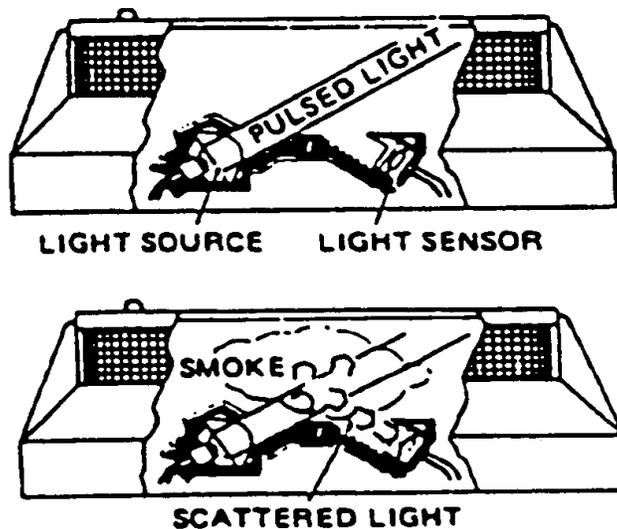
Photoelectric smoke detectors use a light source and a light sensitive cell or device. Photoelectric smoke detectors operate in two different ways. The first way is called light obscuration. This kind of detector has a light beam that continually strikes a photosensitive device. When smoke particles enter the chamber the amount of light reaching the photosensitive device is reduced. This causes

the alarm to sound. Most light obscuration smoke detectors are the beam type. They are used to protect large open areas. The light source is installed at one end of the area to be protected. The photosensitive device is installed at the other end of the protected area. Projected beam detectors are usually installed close to the ceiling. The way that the photoelectric light obscuration smoke detector operates is shown in the drawing below.



**Light Obscuration Smoke Detector**

The other kind of photoelectric smoke detector uses light scattering. This kind of detector also has a light source and a photosensitive device. However, in the light scattering detector the light does not usually strike the photosensitive device. Instead the light is scattered when it strikes any smoke particles that enter the chamber. Some of the scattered light strikes the photosensitive device, which initiates an alarm. The light scattering photoelectric smoke detector is shown in the drawing below.

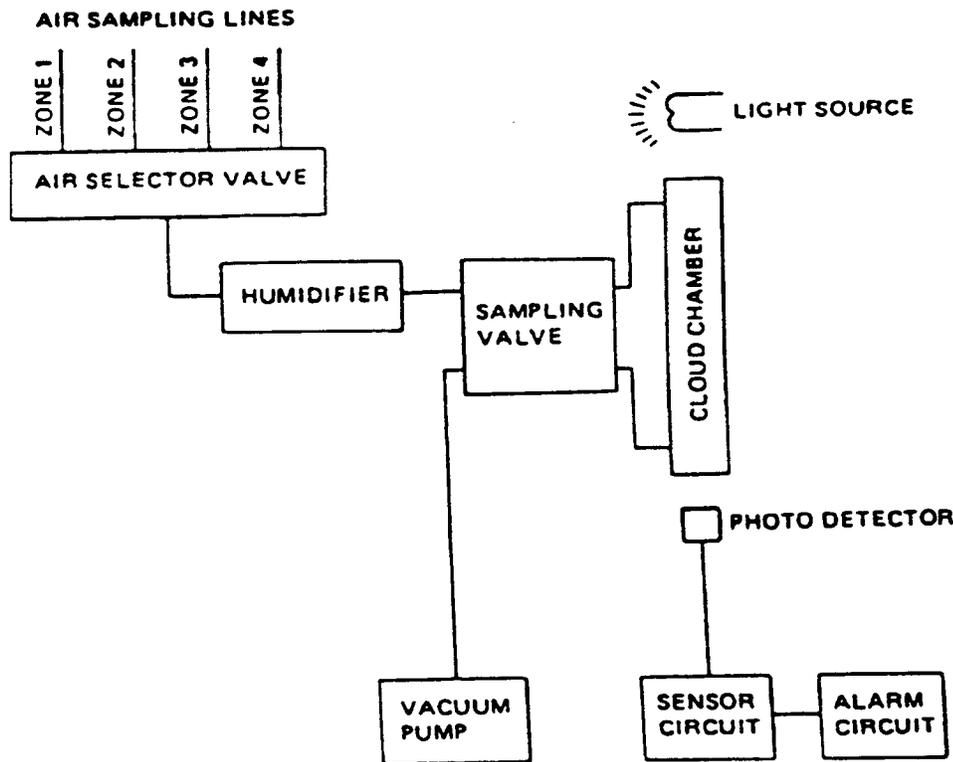


**Light Scattering Smoke Detector**

Smoke detectors using the ionization principle respond faster to open flaming fires. These fires produce large amounts of smaller or invisible smoke particles.

Photoelectric smoke detectors respond faster to smoldering fires. These kinds of fire generally produce more of the larger smoke particles. Both ionization and photoelectric smoke detectors respond and sound an alarm very quickly. Since most fires produce both visible and invisible particles, either kind of detector gives good protection.

Some smoke detectors use a cloud chamber smoke detection principle. A sample of air is drawn into a high humidity chamber. After the air sample is raised to a high humidity, the pressure is slightly reduced. If smoke particles are in the air, the moisture in the air condenses on the smoke particles. This forms a cloud in the chamber. The density of the cloud is measured by a photoelectric device. The detector responds when the density is greater than a preset level. The cloud chamber system uses a valve and switching arrangement to sample from several detection zones. The drawing below shows a cloud chamber smoke detector.



Cloud Chamber Smoke Detector

Some smoke detectors have other features that increase their ability to provide fire protection. Some of these features are part of the following detection systems:

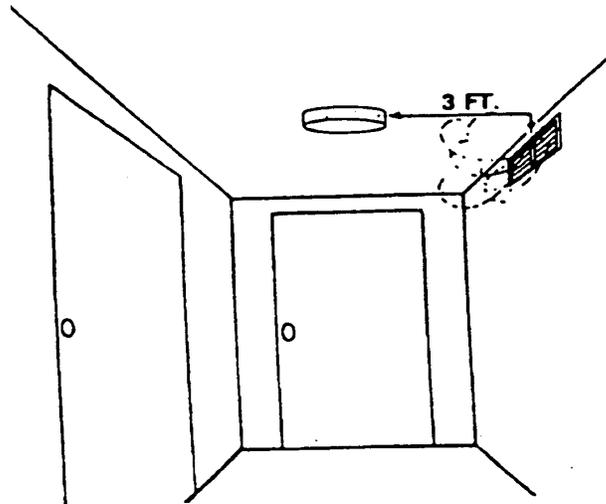
**Addressable System Smoke Detectors.** These are smoke detection systems that provide an alarm indication to a control unit. In addition, they also send an identification indicating the location of the alarm.

**Intelligent System Smoke Detectors.** This kind of smoke detector system sends information about smoke conditions at its location to the control unit. The detector indicates the location of the alarm and the level of smoke at the location.

**Alarm Verification Feature.** This feature is used to reduce the number of unwarranted alarms. For example, the automatic detector must report an alarm condition for a minimum period of time. Other systems require the alarm condition to be confirmed after the detector has been automatically reset.

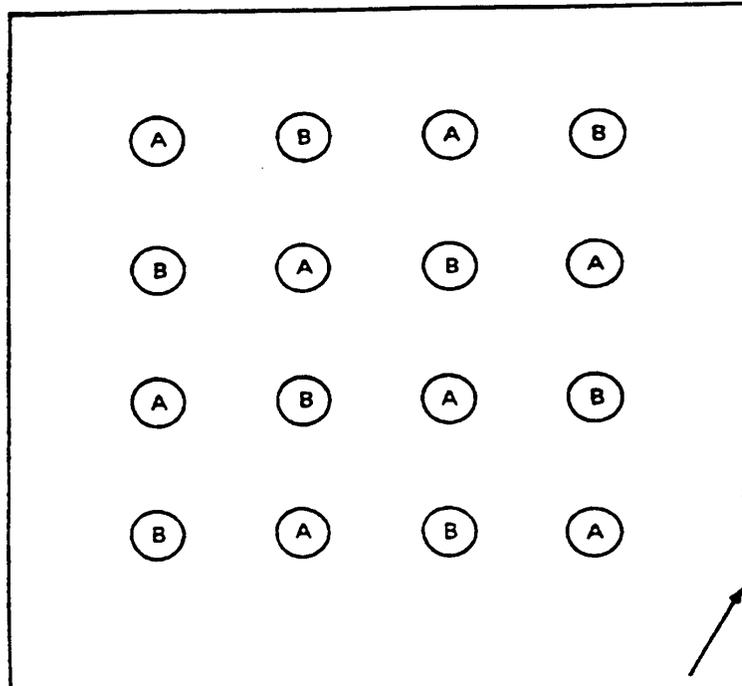
### Placement of Smoke Detectors

Smoke detectors should be placed on the ceiling or high on a wall. Dead air spaces should be avoided. Dead air spaces occur at the top edge of a room where the ceiling and wall meet. Air flow patterns can prevent smoke particles from reaching the corners of a room in the early stages of a fire. Smoke detectors should not be installed in poorly insulated walls or ceilings. Extreme exterior temperatures could cause a thermal barrier on the inside preventing smoke from reaching the detectors. Smoke detectors should not be placed within three feet of an air supply register or return. This is shown in the illustration below. If the detector is too close to the air supply register or return, the smoke could be pushed or pulled away by the air flow.



**Smoke detector Placement**

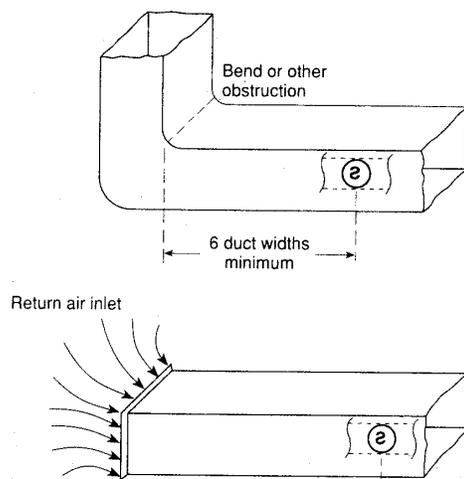
Due to their sensitivity, some smoke detectors are installed on cross-zoned circuits. This is shown in the illustration below. Cross-zoned circuits are used especially where the detectors initiate the discharge of a fire extinguishing agent. Adjacent detectors are installed on a separate zone circuits. A detector must be in alarm condition in each zone before the fire extinguishing agent is discharged.



A = Smoke Detector Connected into to Circuit A  
 B = Smoke Detector Connected into to Circuit B

### Cross Zone Smoke Detector Layout

Smoke detectors may initiate the control of smoke spread. Air duct smoke detectors work by detecting smoke to control air movement by air conditioning and ventilating systems. An air duct smoke detector is illustrated in the figure below.



**Air Duct Smoke Detector**

Air duct smoke detectors may use the ionization, photoelectric, or cloud chamber principle of operation. Air duct smoke detectors are not a good substitute for open area protection. The smoke may not be drawn from open areas when the air conditioning or ventilation systems are shut down. In addition, the smoke laden air may be diluted by clean air from other parts of the building. This could allow a high density of smoke in a single room with very little smoke in the air duct at the detector location.

### **Maintenance of Smoke Detector Systems**

Most smoke detectors are installed in open areas, such as rooms or hallways. Smoke detectors may also be installed in plenums (the area between floors of a building). Other smoke detectors are installed in the ducts of the heating, ventilating, and air conditioning systems. Wherever they are installed, smoke detectors must be inspected and maintained on a regular basis.

A response by the Fire Department to a location when it is not needed reduces the ability to protect the public. Sometimes alarms are transmitted to the Fire Department when the system functioned correctly, but the Fire Department apparatus was not needed. These alarms are referred to as unnecessary alarms. Unnecessary alarms are hard to prevent. It may not be clear that the Fire Department did not need to respond until after the apparatus has arrived.

Other alarms may be transmitted to the Fire Department when the detector system operates for the wrong reason. These are referred to as unwarranted alarms. Unwarranted alarms can occur for several reasons. These reasons are: lack of maintenance, wrong detector placement, improper detector settings, etc. Unwarranted alarms are easier to prevent by properly installing and maintaining the detection system.

Smoke detectors are sophisticated electronic devices. They require periodic testing and maintenance. A qualified person or maintenance company must periodically test the system and its components. This will ensure the integrity of the fire alarm system.

Smoke detectors are designed to be as maintenance free as possible. However, dust, dirt, and other foreign matter can accumulate inside the detector's sensing elements. This will change the sensitivity of the detector. The detector may become more sensitive which will cause unwarranted alarms. Other conditions may cause the detector to become less sensitive. This will reduce the amount of warning time given in case of a fire. Either condition is undesirable. The building owner must take proper steps to see that these conditions do not occur. The building owner is responsible for seeing that the smoke detectors are correctly cleaned and tested when required.

Smoke detectors must be inspected, tested, maintained, and cleaned regularly. Whenever a detector is found to be possibly defective, for any reason, the Fire Safety Director of the building or occupancy must be notified immediately.

### **Cleaning Requirements**

Smoke detectors must be visually inspected and properly cleaned at least every six months. Special conditions (e.g., areas with lots of dust) may require the detectors to be cleaned more often. Most

smoke detectors are designed so that smoke can reach the sensing chamber from all directions. A screen is usually provided to keep out insects, which could cause an unwarranted alarms.

Excessive dust accumulations must be removed so that smoke can reach the sensitive elements of the detector. The person cleaning the smoke detectors should especially concerned with dust covering the screens of the entrance areas of the detector. Nearly all detectors are cleaned by vacuuming or using a soft brush. This will remove accumulated dust from the entrance areas of the detector. The exact cleaning procedure will vary according to the manufacturer's instructions. For example, some smoke detectors have removable screens. Other smoke detectors may be disconnected from their base to make cleaning and inspection easier. However the cleaning is done, the cleaning procedure must always be strictly according to the manufacturer's specifications. Any other method could damage the detector and cause it not to respond in an emergency. For example, smoke detector should never be cleaned with soap and water or cleaning fluids unless specifically instructed by the manufacturer. A copy of the manufacturer's recommended maintenance and cleaning procedures must be kept with the smoke detector maintenance log book.

The person doing the cleaning or maintenance should notify the building's Fire Safety Director before starting the cleaning job. The Fire Safety Director will then notify the approved Central Station Company to which the detector is connected. This will help prevent any unauthorized alarms from being reported to the Fire Department. The detector may also be de-energized or disconnected from its base while it is being cleaned. If a smoke detector has been disconnected for cleaning, but cleaning has not been completed at the end of the work day, it should be disconnected. A detector should not be left disconnected to the rest of the smoke detecting system.

### **Testing of Smoke Detectors**

All smoke detectors must be tested annually to ensure that the detector is operational and responds as intended. The detector must be caused to initiate an alarm from its installed location. For example, functional testing of some ionization smoke detectors is done by using a test magnet. The magnet causes a change in the current passing through the detection chamber. The change simulates the effect of smoke, and causes the detector to alarm. Other detectors have a functional test switch installed to test whether the detector responds properly.

The method used to test the detector will vary with the instructions given by the manufacturer. Aerosols or smoke should never be used, unless specific instructions are given by the manufacturer. Otherwise the warranty on the detector could be voided. To prevent unwarranted alarms, the Central Station Company, to which the detector is connected should be notified before the detector is tested. The Central Station Company should be notified again after the test has been completed.

All smoke detectors must be tested for sensitivity within one year after the have been installed. Every smoke detector that has been installed must then be retested annually thereafter. The annual sensitivity test must be done with the detector in place.

The detector is tested to see if it is within its listed sensitivity range. The exact method used to test smoke detector sensitivity will vary according to the manufacturer's instructions. Some detectors

have a sensitivity test switch that is built into the detector. This makes it easy to test sensitivity without special testing equipment. Other methods used to test smoke detector sensitivity are:

- A calibrated test method approved by the manufacturer.
- Using the manufacturer's calibrated sensitivity test instrument or meter designed for the particular detector.
- Using listed control equipment arranged for the purpose.

The parameters or acceptable sensitivity range for the detector is usually found on the detector, often on the back of the device. The parameters may also be provided by the manufacturer on a specifications sheet. Generally, if a detector is found to have a sensitivity of 0.25 per cent outside the indicated range, it is considered unacceptable.

If the sensitivity is not in the indicated range, the condition may sometimes be corrected by cleaning the detector. Some detectors may be field-adjusted to allow for special environmental conditions. Adjustments of smoke detector sensitivity should be done very carefully, and always in strict accordance with the manufacturer's instructions. Recalibration of a detector should be done only by the manufacturer or by a person specifically trained and qualified to do so.

The building owner has final legal responsibility for ensuring that the smoke detector system is properly tested and maintained. The building owner may use the services of an **approved smoke detector maintenance company**. The detector maintenance company must be acceptable to the Fire Commissioner. Approved smoke detector maintenance companies are usually approved by Underwriters Laboratories, Factory Mutual or by the system's manufacturer, as well.

The required maintenance and calibration may be also be performed by qualified building or occupant personnel. These persons must have the necessary knowledge to perform the tests and calibration. They must have the necessary instruments required to perform the manufacturer's test procedures. They must also have a Fire Department Certificate of Fitness authorizing them to maintain smoke detectors.

Persons qualified to maintain or test a smoke detector system may not be qualified to install or repair the system. Any installation, alteration or repair of electrical wiring or apparatus for fire alarm systems must be performed only by a licensed contractor.

### **Alarm Log Book**

Although the responsibility of maintaining the Alarm Log Book belongs to the Fire Safety Director, often times when a smoke detector goes into alarm it must be recorded in the alarm log book. The Alarm Log Book must be kept at the building's fire command station. During non-business hours the alarm log book may be kept in a secure location other than the fire command station. The alarm log book must be produced by building personnel when the Fire Department responds to an alarm for the premises.

The face or cover of the book must be inscribed “**ALARM LOG BOOK**” and have the name and address of the building. The alarm log book must be a bound book. Spiral bound type books are not acceptable. The pages of the book must be lined and consecutively numbered. All entries in the book must be done in ink.

A new book must be started each year. The alarm log book must be kept for three years after it has been used. The book is used to document the location and causes of alarms. The book is also used to pinpoint defective smoke detectors and patterns of alarm transmissions. Entries must be recorded in the book daily and at other times when necessary.

Required daily entries are:

- ? Name of the Fire Safety Director on duty
- ? Certificate of Fitness number
- ? Time duty started and when relieved

Other information must be recorded whenever the alarm system or part of the system is taken off line. Information that must be recorded in the alarm log book when the alarm system is taken off line includes:

- ? Time the system was taken off line
- ? Reason for taking the system off line
- ? Name and number of the person notified at the Central Station Company
- ? Time the system was restored to service

Other information is required to be recorded whenever an alarm activates. Information that must be entered upon alarm activation includes:

- ? Date and time the alarm activated
- ? Type and location of the device that was activated
- ? Probable cause of the alarm
- ? The FDNY unit and officer responding

Entries in the Alarm Log Book are the responsibility of the building’s Fire Safety Director. Entries must be made under the direction of the Fire safety Director. If a Fire Safety Director is not on duty, the entries must be made by the Deputy Fire Safety Director or Building Evacuation Supervisor.

### **Smoke Detector Maintenance Log Book**

Records should be kept of all inspections, tests, and maintenance of smoke detectors in a building or occupancy. In addition to the alarm log book, the Fire Safety Director must also maintain a Smoke Detector Maintenance Log Book. This log book must record the history of the maintenance of each smoke detector in the building. The smoke detector maintenance log book must be kept available in the building engineer's office.

The smoke detector maintenance log book must be a bound book with numbered and lined pages. All entries in the book must be made in ink. A new log book must be started each year. All log books must be retained for three years after they have been used. A copy of the maintenance procedures recommended by the manufacturer must be kept together with the log book.

Information that must be recorded in the smoke detector maintenance log book includes:

- ? Total number of smoke detectors and their location
- ? Details of semi-annual cleaning according to manufacturer's specifications
- ? Records of annual sensitivity tests in accordance with manufacturer's procedures
- ? Results of all tests that are conducted
- ? Names of the persons or company performing inspections and tests
- ? Dates of tests, inspections, and maintenance conducted

### **Excessive Alarms**

Any combination of three unwarranted or unnecessary alarms within a six months period is considered excessive. Any single alarm after a combination of three or unwarranted alarms within the same six months period is also considered excessive. Excessive alarms are a violation of Fire Department Rules; they make the building owner subject to fines and other disciplinary actions.

Many studies have shown that proper alarm and detector maintenance greatly reduces the number of unwarranted alarms. While smoke detectors are designed to be as maintenance free as possible, foreign matter can still accumulate on or inside the smoke detector. Periodic routine maintenance will reduce unwarranted alarms and ensure that the detectors respond properly when they are needed.

**§17-06 <sup>25</sup> Maintenance and Testing of Smoke Detectors and the Requirements for Log Books and Required Connections to Authorized Central Stations.**

(a) **Definitions.**

**Addressable System Smoke Detector.** System smoke detectors which, in addition to providing alarm indication to a control unit, are also capable of communicating a unique identification (ADDRESS).

**Alarm Verification Feature.** A feature of automatic fire detection and alarm systems to reduce unwarranted alarms wherein automatic fire detectors must report alarm conditions for a minimum period of time, or confirm alarm conditions within a given time period, after being reset to be accepted as a valid initiation signal.

**Building-required system.** A system described in §17-06(c) of this directive. Except as otherwise provided, this term shall not include sub-systems.

**Intelligent System Smoke Detector.** A system smoke detector capable of communicating information about smoke conditions at its location to a control unit. This type of detector will typically communicate a unique identification (ADDRESS) along with an analog signal which indicates the level of smoke at its location.

**Ionization Smoke Detector.** An ionization smoke detector has a small amount of radioactive material which ionizes the air in the sensing chamber, thus rendering it conductive and permitting a current to flow between two charged electrodes. This gives the sensing chamber an effective electrical conductance. When smoke particles enter the ionization area, they decrease the conductance of the air by attaching themselves to the ions, causing a reduction in mobility. When the conductance is less than a predetermined level, the detector responds.

**Photoelectric Smoke Detector.** In a photoelectric light scattering smoke detector, a light source and a photosensitive sensor are so arranged that the rays from the light source do not normally fall on the photosensitive sensor. When smoke particles enter the light path, some of the light is scattered by reflection and refraction onto the sensor, causing the detector to respond.

**Smoke Detector.** A device that detects the visible or invisible particles of combustion.

**Sub-system.** Any branch circuit off of a system described in §17-06(c). A sub-system shall include but not be limited to a proprietary, subservient, subsequent or associated system.

**Unnecessary Alarm.** An alarm transmitted to the Fire Department for which the system functioned as designed but apparatus response proved unnecessary.

**Unwarranted Alarm.** An alarm transmitted to the Fire Department for which the detector system functioned for other than its intended purpose. Causes may be: lack of maintenance, improper detector placement, improper system installation, induced electrical currents, improper detector setting for installed location, computer console malfunction, etc.

(b) **General.**

(1) These rules and regulations are based on NFPA Standard 72E of 1990 which is the standard for automatic fire detectors. Since this standard does not fully address the problems encountered in New York City, additions and modifications have been incorporated to reflect our experience with smoke detector alarms in occupancies throughout New York City.

(2) Smoke detectors are sophisticated electronic devices that require periodic testing and maintenance. To maintain the integrity of any fire alarm system, it is important to have a qualified person or maintenance company, as set forth below, periodically test the system and components.

(3) Smoke detectors are designed to be as maintenance free as possible. However dust, dirt, and other foreign matter can accumulate inside a detector's sensing elements and change its sensitivity. They can become either more sensitive which may cause unwarranted alarms, or less sensitive which could reduce the amount of warning time given in case of a fire. Both are undesirable and may subject the building owner to enforcement action under this rule.

(4) Some examples of available technology to minimize the instances of unwarranted and unnecessary alarms include but are not limited to ionization smoke detectors, addressable system smoke detectors, photoelectric smoke detectors, intelligent system smoke detectors and an alarm verification feature. The system must

be of a type permitted by and installed in accordance with the Building Code.

(c) **Affected Occupancies.** Any building that has a system required pursuant to Administrative Code §§27-972(f) through 27-972(m) and any building which has an alarm and communications system accepted by the Buildings Commissioner in lieu of a Class E system, as further described in Department of Buildings Advisory dated July 22, 1975, must comply with this section. In addition, any sub-system, whether or not required by law, must also comply with this section. The requirements of this section shall not apply to tenants or occupants residing in spaces classified as occupancy group J-1.

(d) **Maintenance Requirements.** The following maintenance procedures shall be followed. In buildings containing building-required systems and/or sub-systems, whether or not such systems are required by law, the building owner shall be responsible for maintenance of such systems.

(1) Smoke detectors shall undergo a cleaning procedure in accordance with manufacturer's specifications at least every six months. Maintenance shall commence within 90 days of the effective date of this section.

(2) Smoke detectors shall be tested for sensitivity as per manufacturer's recommended procedure within one year after installation and every year thereafter.

(3) The annual sensitivity test of the smoke detector shall be performed functionally in place as detailed in NFPA 72E §8-3.4 1990 edition. If the detector's sensitivity is outside specifications, replace the detector or follow the manufacturer's recommended procedure.

(4) To assure that each smoke detector is within its listed marked sensitivity range it should be tested using either:

- (i) a calibrated test method, or
- (ii) the manufacturer's calibrated sensitivity test instrument, or
- (iii) listed control equipment arranged for the purpose.

(5) The building owner shall comply with the provisions of this section in the following manner:

(i) Engage the services of an alarm maintenance company acceptable to the fire commissioner, such as a company approved by Underwriters Laboratories, Factory Mutual or other manufacturer-approved company, to perform the required maintenance in accordance with smoke detector manufacturers' specifications.

(ii) In the alternative, required maintenance and calibration may be performed by building or occupant personnel, as appropriate, who:

(A) possess the necessary knowledge to perform the tests and calibration and have a fire department certificate of fitness and

(B) have the necessary instruments required to comply satisfactorily with manufacturers' test procedures.

(iii) The maintenance procedures described in §§17-06(d)(5)(i) and 17-06(d)(5)(ii) can be performed as stated. However, any installation, alteration or repair of electrical wiring or apparatus for fire alarm systems shall be performed by a licensed contractor pursuant to Building Code Reference Standard 17-3A(12) and/or 17-3B(12) where one or both of such reference standards are applicable.

**(e) Alarm log book and system malfunctions.**

(1) An alarm log book shall be kept at the building's fire command station. The alarm log book shall be a bound book with consecutively numbered lined pages with all entries made in pen. The face or cover of the book shall have the inscription, "ALARM LOG BOOK", and the name and address of the building. Spiral bound type books are not acceptable. A new log book shall be commenced annually, and log books shall be retained for a period of three years following the end of the period of use. This book will be used by building personnel to document the location and causes of alarms and pinpoint defective smoke detectors and patterns of alarm transmissions. During non-business hours in the absence of a secure location at the fire command station, the alarm log book may be secured in another area provided it is produced by building personnel when the fire department responds to an alarm for the premises. The alarm log book shall be available on the premises within 30 days of the effective date of this section.

(2) Entries shall be recorded in the book daily and when necessary.

(i) Required entries, daily

(A) Name and certificate of fitness number of each fire safety director on duty.

(B) Time duty started and relieved.

(ii) Required entries, when necessary

(A) Information required when alarm system or part thereof is taken off-line.

(a) Time system taken off-line.

(b) Reason.

(c) Name and number of the person notified at central station.

(d) Time system is restored to service.

(B) Information required when alarm activates.

(a) Date and time alarm activated.

(b) Type and location of device, e.g., smoke detector, 27th floor, elevator lobby.

(c) Probable cause of alarm.

(d) FDNY Unit and officer responding.

(3) The entries in the log are the responsibility of the building's fire safety director and shall be made under his direction. If there is no fire safety director on duty the entries shall be made by the deputy fire safety director or building evacuation supervisor.

(4) The following is a suggested format for recording the required information.

NAME, DATE & LOCATION PROBABLE FDNY OFFLINE  
CERT.# TIME OF AND TYPE CAUSE UNIT & INFOR-&  
DUTY ALARM OF OFFICER MATION  
HRS. OF ACTIVA-T DETECTOR  
F.S.D. ION

(5) Whenever any portion or function of an alarm system in occupancies described in §17-06(c) is unable to function as required by applicable laws and regulations, the affected

tenants/occupants shall be notified and a record of notification made shall be entered in the alarm log book.

(f) **Smoke detector maintenance log book.**

(1) A smoke detector maintenance log book shall be available in the Engineer's office for building-required systems and for sub-systems whether or not required by law. This book shall record the history of each detector in the respective building or occupancy. The smoke detector maintenance log book shall be a bound book with consecutively numbered lined pages. All entries shall be entered in pen and the face or cover of the book shall have the inscription, "SMOKE DETECTOR MAINTENANCE LOG BOOK'", along with the name and address of the building or occupancy as appropriate. A new log book shall be commenced annually, and log books shall be retained for a period of three years following the end of the period of use. In lieu of the above, computerized records may be maintained at the Engineer's office in compliance with §17-06(f)(2).

A copy of the manufacturer's recommended maintenance procedures shall be kept with the smoke detector maintenance log book.

(2) Records shall be maintained that detail the following:

- (i) Total number of detectors and their locations
- (ii) Semi-annual cleaning in accordance with manufacturers' specifications
- (iii) Sensitivity test as per manufacturers' procedure within one year after installation and every year thereafter
- (iv) Results of tests conducted
- (v) Names of person or company performing inspection or test
- (vi) Dates of tests, inspections and maintenance conducted.

(g) **Excessive alarms.**

(1) Any combination of three unwarranted or unnecessary alarms emanating from a building-required system and/or

any of its sub-systems, whether or not required by law, within a six-month period and each single unwarranted or unnecessary alarm after such combination but that occurs within such period shall be deemed excessive and shall constitute a violation of this section.

(2) A twelve month grace period will be granted beginning on the effective date of this section before enforcement of §17-06(g)(1) is initiated. Building owners are expected to utilize this twelve month period to upgrade or modify their alarm systems to reduce the instances of unwarranted or unnecessary alarms.

(3) For the purpose of §17-06(g)(1), the malicious transmission of a false alarm by activation of a manual pull box shall not be construed as an unnecessary alarm.

(4) Sections 17-06(d)(1) and 17-06(e)(1) will be enforced as per stated time periods.

(h) **Approved central station connections.** All building-required systems, and sub-systems in buildings containing building-required systems whether or not required by law, that connect to central stations shall be connected to only those central stations which have received all necessary authorization to operate from the fire department. A four month grace period will be granted beginning on the effective date of this section before enforcement of §17-06(h) is initiated.

(i) **Modifications.** Whenever circumstances, conditions, or surroundings render it impracticable to comply with all the foregoing requirements, the fire commissioner may waive or modify provisions over which he has jurisdiction to such extent as he may deem necessary, consistent with public safety.

(j) **Saving clause.** If any paragraph, subparagraph or subdivision of this section shall be adjudged by any court or agency of competent jurisdiction to be invalid, such judgment shall not affect, impair or invalidate the remainder thereof, but shall be confined in its operations to the paragraph, subparagraph or subdivision thereof directly involved in the controversy in which such judgment shall have been rendered.