

Office of the Fire Marshal and
Emergency Management

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MAINTENANCE OF SMOKE
ALARMS AND CARBON
MONOXIDE ALARMS



February 2019

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GUIDELINE

Preface

This guideline updates TG-04-1998 published in July 1998. Portions of the guideline have been changed to reflect the current requirements in the Ontario Fire Code, O. Reg. 213/07, as amended. Changes include the addition of carbon monoxide alarm maintenance requirements and the revision of smoke alarm maintenance requirements. This guideline also outlines building owner, landlord and occupant responsibilities and best practices with respect to the maintenance, testing and replacement of smoke alarms and carbon monoxide alarms.

February 2019

OFMEM Section: Technical Services

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TABLE OF CONTENTS

| SECTION | PAGE |
|--|-------------|
| Abstract..... | 2 |
| 1.0 SCOPE..... | 3 |
| 2.0 BACKGROUND | 3 |
| 3.0 TEST AND MAINTENANCE REQUIREMENTS | 3 |
| 3.1 Schedule for Smoke Alarms and CO Alarms | 3 |
| 3.2 Frequency of Smoke Alarm and CO Alarm Testing and Maintenance..... | 4 |
| 3.3 Routine Test and Maintenance | 5 |
| 3.4 Annual Test and Maintenance | 5 |
| 3.5 Smoke Alarm and CO Alarm Replacement..... | 6 |
| 4.0 RESPONSIBILITY OF THE LANDLORD IN RENTAL UNITS..... | 7 |
| 5.0 RESPONSIBILITY OF THE TENANT OR OCCUPANT IN RENTAL UNITS..... | 7 |

APPENDIX A: PURCHASING CONSIDERATIONS FOR ALARM REPLACEMENTS

ATTACHMENTS

Smoke Alarm and Carbon Monoxide Alarm Maintenance Checklist

Smoke Alarm and Carbon Monoxide Alarm Maintenance Information for Tenants and Occupants in Rental Units

Abstract

Smoke alarms and carbon monoxide (CO) alarms are important life safety devices and as such are to be maintained in effective operating condition at all times. A disconnected power supply, missing batteries, dead batteries and improperly installed batteries are common reasons for alarm failure during a fire or CO emergency.

This document has been prepared by the Office of the Fire Marshal and Emergency Management to provide guidance with respect to smoke alarm and CO alarm maintenance, to ensure operability as required by the Ontario Fire Code. It is intended to assist:

- The general public,
- Building owners/landlords,
- Tenants and other building occupants, and
- Fire departments.

This document also provides information on:

- The test and maintenance requirements for smoke alarms and CO alarms (*Sections 3.1 and 3.2*);
- The procedures for the testing of smoke alarms and CO alarms (*Sections 3.3 and 3.4*);
- The replacement of smoke alarms and CO alarms (*Section 3.5 and Appendix A*); and
- The respective responsibilities of the landlord, tenants and occupants in rental residential units (*Sections 4 and 5*).

A suggested maintenance checklist and tenant/occupant information sheet is included with this guideline.

1.0 SCOPE

This document has been prepared by the Office of the Fire Marshal and Emergency Management to provide guidance to the general public, building owners, landlords, tenants and other building occupants and fire departments, on smoke alarm and CO alarm testing and maintenance, to ensure operability as required by the Ontario Fire Code (OFC).

2.0 BACKGROUND

Subsections 6.3.3. and 6.3.4. of Division B of the Ontario Fire Code (OFC) require that smoke alarms and CO alarms be maintained in operating condition. Article 1.2.1.1. of Division A of the OFC states that the “owner” is responsible for carrying out the provisions of the OFC. Articles 6.3.3.2. and 6.3.4.2. of Division B of the OFC state that for residential rental suites, the landlord is considered to be the “owner” for purposes of complying with the smoke alarm and CO alarm maintenance requirements. However, any person (including a tenant or other occupant) may be held responsible for disabling either a smoke alarm or CO alarm so as to make the alarm inoperable.

Every person who contravenes any provision of the OFC and every director or officer of a corporation who knowingly concurs in such contravention is guilty of a provincial offence. Failure to maintain a smoke alarm or CO alarm in operating condition is an OFC violation and upon conviction persons may be subject to a fine, imprisonment, or both.

3.0 TEST AND MAINTENANCE REQUIREMENTS

Smoke alarms and CO alarms are important life safety devices and as such must be maintained in operating condition at all times. Smoke alarms and CO alarms become inoperative when the power source (battery and/or AC power supply) is disconnected. A disconnected power supply, missing batteries, dead batteries and improperly installed batteries are common reasons for alarm failure during a fire or CO emergency.

3.1 Schedule for Smoke Alarms and CO Alarms

On AC powered smoke alarms and CO alarms, the “power on” indicator should be checked regularly to ensure the alarm is powered and activated.

When the circuit breaker is turned off or the fuse is removed from the smoke alarm or CO alarm circuit to change or service the alarm, the power should be restored to the circuit immediately upon completion of the work. In the event that the circuit cannot be restored immediately, battery-operated smoke alarms or CO alarms should be installed to provide protection on a temporary basis, until original power is restored.

Battery-operated smoke alarms and CO alarms provide an intermittent warning signal when the battery is nearing the end of its life:

- If the battery is replaceable, a new battery of the same type should be installed immediately to ensure continued operability of the smoke alarm or CO alarm.
- If the battery is not replaceable (i.e. sealed battery) the entire smoke alarm or CO alarm should be replaced immediately to ensure continued protection. For safe disposal, each alarm is required to have a means of dissipating the remaining energy in the battery. Most manufacturers have a tab or switch located on the back of the alarm which performs this function. See the manufacturer's instructions for safe disposal.

Caution: *When the energy is dissipated from the battery of the alarm, the alarm will no longer be serviceable and must be replaced.*

3.2 Frequency of Smoke Alarm and CO Alarm Testing and Maintenance

The following test and maintenance procedures are recommended to ensure operability of smoke alarms and CO alarms and to fulfil obligations under the Ontario Fire Code. More frequent testing and cleaning schedules will provide greater assurance of operability and may reduce nuisance alarms.

The Ontario Fire Code requires landlords to test smoke alarms and CO alarms at the following times:

- (a) Annually;
- (b) After a change of tenancy in rental units;
- (c) Following installation of a new battery for battery-operated smoke alarms or CO alarms; and
- (d) Following electrical renovations or servicing when smoke alarms or CO alarms are AC powered to ensure that the alarm circuit has not been disconnected.

As a best practice, homeowners/occupants/residents should test smoke alarms and CO alarms at the following times:

- (a) Weekly; and
- (b) In the case of battery-operated smoke alarms or CO alarms, when the building occupants have been absent for seven or more days (such as for vacation) to ensure that the battery is still operational;

Note: *In rental units, the tenant should inform the landlord of the absence and request a test of the smoke alarm – please also refer to the information contained in Section 5 of this guideline.*

3.3 Routine Test and Maintenance

- (a) Smoke alarms and CO alarms should be tested by pressing the test button located on the alarms or through another test method as may be prescribed by the manufacturer. The alarm signal should sound during this test. If provided with a visual signalling component (i.e. strobe), the visual signal should also activate during the test. If interconnected alarms are installed, all alarms should sound simultaneously when any one of the alarms is tested.
- (b) Smoke alarms and CO alarms should be visually checked to ensure the alarms are securely fastened to the ceiling, wall (or receptacle for CO alarms only).
- (c) Smoke alarms and CO alarms should be visually checked to ensure the alarms are not obstructed/installed in a manner that would prevent smoke or CO from reaching or entering the alarm (i.e. the ventilation openings of the alarm are clean and unobstructed, any ceiling fans are distant enough to prevent air flow from reaching the alarm, etc.).

3.4 Annual Test and Maintenance

The annual test and maintenance procedures described below are in addition to the routine test and maintenance activities described in Section 3.3 above. Routine test and maintenance may be performed simultaneously with annual test and maintenance activities.

- (a) Unless otherwise recommended by the manufacturer (such as for 10-year sealed battery-operated alarms), replace the battery in the alarm and ensure that the battery is securely connected to the battery terminals.
CAUTION: *Check to ensure that the battery is of the type recommended by the manufacturer. Alarms identified by the manufacturer as requiring alkaline batteries should have only alkaline batteries installed, otherwise the alarms may fail to operate. Rechargeable batteries should not be used in alarms unless the manufacturer has specifically recommended such use.*
- (b) Smoke alarms and CO alarms should be checked to ensure that battery terminals have not corroded and batteries have not leaked. Where batteries show evidence of leakage or corrosion, the alarms should be replaced.
- (c) Clean the exterior of the smoke alarm or CO alarm with a household vacuum cleaner using the brush attachment or with compressed air. If specifically recommended by the manufacturer, open the cover and gently vacuum the circuit board.

CAUTION: *For smoke alarms and CO alarms that are AC powered, some manufacturers specify that the power supply to the alarm circuit be disconnected (normally a separate breaker or fuse at the main panel) before vacuuming. AC powered smoke alarms should only be vacuumed externally and no attempt should be made to open the case. Be sure to follow the manufacturer's instructions at all times. **Remember to restore the power supply** when the cleaning is completed.*

- (d) Do a visual check to ensure that the smoke alarm and CO alarm is securely fastened to the ceiling, wall (or receptacle for CO alarms only).

3.5 Smoke Alarm and CO Alarm Replacement

Smoke alarms and CO alarms are required to be replaced within the timeframe indicated in the manufacturer's instructions, as per requirements of the OFC. Generally, this "end of life" timeframe is ten years for smoke alarms and seven to ten years for CO alarms. Some alarms have an end-of-life signal indicating that the alarm will soon stop operating and is to be replaced.

Additionally, smoke and/or CO alarms should be replaced if:

- (a) The alarm does not sound (*or produce a visual signal if applicable*) when tested (after it is confirmed that the battery is fully charged and/or the AC power supply is connected);
- (b) The exterior of the alarm is physically damaged;
- (c) The exterior of the alarm is painted;
- (d) The alarm is covered with smoke stains, heavy grease or dirt accumulations;
- (e) The alarm causes frequent false alarms that are not the result of cooking or steam; or
- (f) Alarm batteries show evidence of leakage or corrosion.

Appendix A of this guideline provides an outline of alarm replacement considerations including:

- When hardwired or battery-operated alarms should be used;
- When wirelessly communicating alarms may be used; and
- When long-life battery alarms may be used.

4.0 RESPONSIBILITY OF THE LANDLORD IN RENTAL UNITS

The landlord is responsible for smoke alarm and CO alarm maintenance in rental residential units. This includes the obligation to take action when a tenant or occupant reports a problem or files a complaint respecting operability of smoke alarms and CO alarms. The testing and maintenance in accordance with the schedule identified in Section 3 of this guideline is also the landlord's responsibility. Such testing can only be carried out with the full co-operation of the tenant or occupant since access to the alarms must be available. Lease agreements should include provisions for access to carry out the necessary testing and maintenance of alarms. Unless it is an emergency, the *Residential Tenancies Act* requires that landlords give 24 hours written notice to enter a tenant's premises and the time of entry must be between 8 a.m. and 8 p.m.

The OFC requires that written records of smoke alarm and CO alarm tests be maintained noting what was done and the time and date the test was done. Article 1.1.2.2. of Division B of the OFC states that the original or a copy of a record of tests or inspections required by the OFC is to be maintained for a period of at least two years after it is made. Therefore, it is in the landlord's interest to keep written records of any and all testing and maintenance as the records will help to demonstrate due diligence in maintaining the smoke alarms and CO alarms in operating condition. The checklist attached to this guideline may be used for this purpose.

In addition to the above, the OFC requires that the landlord provide a copy of the smoke alarm and CO alarm manufacturer's maintenance instructions, or approved alternative maintenance instructions, to the occupant in each rental unit. A sample tenant/occupant information sheet for the alarms is provided with this guideline. This information sheet may be provided with the manufacturer's instructions. It is in the landlord's interest to keep a written record to demonstrate that this information has been provided to the occupant of each rental unit.

5.0 RESPONSIBILITY OF THE TENANT OR OCCUPANT IN RENTAL UNITS

The primary responsibility for ensuring that smoke alarms and CO alarms are maintained in operating condition rests with the landlord. This includes following the test and maintenance schedule identified in Section 3 of this guideline. The Ontario Fire Code also contains provisions that:

- Require the tenants to notify the landlord when they become aware that a smoke alarm or CO alarm is disconnected, not operating, or the alarm operation is impaired; and
- Prohibit anyone from disabling a smoke alarm or CO alarm.

Consequently, a tenant or occupant who is aware that a smoke alarm or CO alarm is either inoperable or impaired and has not notified the landlord or who disables a smoke alarm or CO alarm is guilty of a provincial offence and upon conviction may be subject to a fine, or imprisonment, or both.

Smoke alarms and CO alarms are important life safety devices installed for the protection of the occupants of the suite as well as other building occupants. It is reasonable to expect that tenants and occupants will take the following actions to ensure the operability of the alarms:

- (a) Advise the landlord when the low battery signal is activated on battery-operated smoke alarms or CO alarms so that the landlord can make arrangements for replacement of the battery;
- (b) Advise the landlord when the end of life signal is activated on smoke alarms or CO alarms so that the landlord can make arrangements for replacement of the alarms;
- (c) Advise the landlord if the "power on" indicator goes out on AC powered smoke alarms or CO alarms so that the landlord can arrange for appropriate repairs;
- (d) Advise the landlord if the smoke alarm or CO alarm is damaged so that the landlord can make arrangements for repair/replacement of the alarm;
- (e) Following an absence of seven or more days (such as vacation), arrange for battery-operated smoke alarms or CO alarm to be tested in accordance with Section 3.3(a) of this guideline to ensure that the alarms are operable; and
- (f) Advise the landlord of any electrical problems that may affect the operability of AC powered smoke alarms or CO alarms.

Tenants or occupants have a responsibility to actively participate in ensuring that the smoke alarms and CO alarms are maintained in operating condition and co-operate with the landlord in carrying out the necessary testing and maintenance.

APPENDIX A:

PURCHASING CONSIDERATIONS FOR ALARM REPLACEMENTS

A. Replacement Smoke Alarm

Generally a replacement smoke alarm should, at minimum, have the same features as the existing smoke alarm. The OFC specifies the level/type of protection features required for replacement smoke alarms based on whether Part 9 of the OFC is applicable to the suite and whether the suite was constructed before, on, or after April 6, 1998.

If the suite is subject to Part 9 of the OFC, the replacement smoke alarm is required to provide the level/type of protection required by Part 9 of the OFC.

Part 9 includes smoke alarm requirements for:

- Boarding, lodging and rooming houses
- Multi-unit residential buildings and dwelling units / sleeping rooms contained within
- Suites / sleeping rooms in care occupancies and retirement homes
- Two unit residential occupancies, and
- Guest suites in hotels

The minimum smoke alarm protection features vary depending on the building type, so the applicable Section in Part 9 of the OFC should be reviewed to determine appropriate smoke alarm requirements.

If the suite was constructed or renovated on or after April 6, 1998 and not subject to Part 9 of the OFC, the OFC requires the replacement smoke alarm to provide the level/type of protection required by the Ontario Building Code in effect at the time of construction. Some examples of smoke alarm features that may be required depending on date of construction include:

- Hardwired
- Interconnected with other smoke alarms
- Complies with CAN/ULC-S531
- 'Hush' button
- Battery back-up, and
- A visual signalling component

APPENDIX A:

PURCHASING CONSIDERATIONS FOR ALARM REPLACEMENTS

If the suite was constructed before April 6, 1998 and not subject to Part 9 of the OFC, the OFC requires the replacement smoke alarm to provide the level/type of protection required by Article 2.13.2.1. of the OFC. This includes the following features:

- Hardwired or battery powered
- Complies with CAN/ULC-S531

For assistance in determining requirements that apply, please contact your municipal fire department who is the authority having jurisdiction for Fire Code enforcement.

B. Replacement CO Alarm

Generally, a replacement CO alarm should, at minimum, have the same features as the existing CO alarm. The OFC specifies the level/type of protection features required for replacement CO alarms based on whether the suite was constructed before or on/after August 6, 2001.

If the residential suite was constructed on or after August 6, 2001, the OFC requires the replacement CO alarm to provide the level/type of protection required by the Ontario Building Code at the time of construction. This includes the following features:

- Hardwired
- Interconnected with other CO alarms and
- Complies with CSA 6.19 or UL 2034

If the residential suite was constructed before August 6, 2001, the OFC requires the replacement CO alarm to provide the level/type of protection specified in Article 2.16.2.1. of the OFC. This includes the following features:

- Hardwired, battery powered, or plug-in
- Complies with CSA 6.19 or UL 2034

For assistance in determining requirements that apply, please contact your municipal fire department who is the authority having jurisdiction for Fire Code enforcement.

APPENDIX A:

PURCHASING CONSIDERATIONS FOR ALARM REPLACEMENTS

C. Replacement Combination Smoke/CO Alarm

A combination smoke/CO alarm may replace individual smoke alarms and CO alarms if the combination alarm contains the features specified in Sections A and B above based on Part 9 applicability and the suite's construction date. The combination alarm is required to comply with both CAN/ULC-S531 (for the smoke alarm component) and either CSA 6.19 or UL 2034 (for the CO alarm component).

D. Replacement Wireless Interconnected Smoke Alarms

Where either the Ontario Building Code or Ontario Fire Code specifically require hardwired, interconnected smoke alarms, wireless interconnection is not a substitute, unless approved by the Chief Fire Official.

This does not restrict the use of wirelessly communicating smoke alarms where only battery-operated smoke alarms are required, or where an Owner wishes to install additional smoke alarms not required by the Ontario Building Code or Ontario Fire Code.

E. Replacement Long Life Smoke and CO Alarms

Some smoke alarms and CO alarm models are powered by long-life (10-year) sealed batteries that are intended to supply power for the useful life of the alarm. These batteries cannot be removed or replaced. For safe disposal, a deactivation feature (which dissipates the charge in the battery) is required on sealed battery smoke alarms and on most sealed battery CO alarms. When the deactivation feature is activated, the entire smoke alarm and/or CO alarm has to be replaced.

SMOKE ALARM AND CARBON MONOXIDE ALARM MAINTENANCE CHECKLIST

Address/Suite Number: _____ Date: _____

Type of Alarm: Smoke Alarm CO Alarm Combination Smoke/CO Alarm

Alarm has been tested as a result of:

| | |
|---|--|
| <input type="checkbox"/> Routine test and maintenance | <input type="checkbox"/> Change to electrical circuitry |
| <input type="checkbox"/> Annual test and maintenance | <input type="checkbox"/> Complaint |
| <input type="checkbox"/> Change of tenancy | <input type="checkbox"/> Other (e.g. extended absence) _____ |
| <input type="checkbox"/> Change of battery | _____ |

A. ROUTINE TEST AND MAINTENANCE

YES NO

| | | |
|--|--------------------------|--------------------------|
| (1) Alarm is securely fastened to the wall, ceiling, or receptacle (<i>if applicable</i>). | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) Alarm shows no evidence of physical damage, paint application, or excessive grease and dirt accumulations. | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) Ventilation openings on the alarm are clean and free of obstructions. | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) Alarm signal sounds when the alarm is tested using the test button | <input type="checkbox"/> | <input type="checkbox"/> |
| (5) (<i>If applicable</i>) Strobe illuminates when the alarm is tested using the test button | <input type="checkbox"/> | <input type="checkbox"/> |

B. ANNUAL TEST AND MAINTENANCE

YES NO

| | | |
|--|--------------------------|--------------------------|
| (1) Alarm is securely fastened to the wall or ceiling, or receptacle (<i>if applicable</i>). | <input type="checkbox"/> | <input type="checkbox"/> |
| (2) Alarm shows no evidence of physical damage, paint application, or excessive grease and dirt accumulations. | <input type="checkbox"/> | <input type="checkbox"/> |
| (3) Ventilation openings on the alarm are clean and free of obstructions. | <input type="checkbox"/> | <input type="checkbox"/> |
| (4) Alarm has been vacuumed. | <input type="checkbox"/> | <input type="checkbox"/> |
| (5) Alarm is powered by: <input type="checkbox"/> AC wiring; <input type="checkbox"/> standard battery; <input type="checkbox"/> long life battery; AC wiring with: <input type="checkbox"/> standard battery backup or <input type="checkbox"/> long life battery backup that expires in the year _____. For standard battery-operated alarms: Battery has been replaced and securely connected. | <input type="checkbox"/> | <input type="checkbox"/> |
| Battery is of _____ type as recommended by the manufacturer. | <input type="checkbox"/> | <input type="checkbox"/> |
| Battery terminals are free of corrosion and signs of leakage. | <input type="checkbox"/> | <input type="checkbox"/> |
| (6) Alarm signal sounds when the alarm is tested using the test button. | <input type="checkbox"/> | <input type="checkbox"/> |
| (7) (<i>If applicable</i>) Strobe illuminates when the alarm is tested using the test button. | <input type="checkbox"/> | <input type="checkbox"/> |

C. SERVICING AND REPLACEMENT (Complete this section if "No" is checked in sections A or B.)

| | |
|---|--|
| Alarm has been serviced as follows: _____ | |
| Alarm has been replaced as a result of: | |
| <input type="checkbox"/> Failure to sound alarm during test | <input type="checkbox"/> Frequent false alarms |
| <input type="checkbox"/> Physical damage | <input type="checkbox"/> Battery leakage |
| <input type="checkbox"/> Painted exterior case | <input type="checkbox"/> Age |
| <input type="checkbox"/> Excessive stains, grease or dirt accumulations | <input type="checkbox"/> Other _____ |

Name and Title (please print): _____

Agency (please print): _____

Signature: _____

SMOKE ALARM AND CARBON MONOXIDE ALARM MAINTENANCE INFORMATION FOR TENANTS AND OCCUPANTS IN RENTAL UNITS

The Ontario Fire Code (OFC) requires that every place of residence have smoke alarms installed and kept in working condition. The OFC also requires that every place of residence containing a: fuel burning appliance; fireplace; or attached garage, has carbon monoxide (CO) alarms installed and kept in working condition. Both alarms are very important for the safety of you, your family and your neighbours as they give early warning of a fire or elevated levels of CO. Your landlord is responsible for installing smoke alarm and CO alarms and keeping the alarms in working condition, including testing, repairs and replacement as necessary. Your landlord must also act to correct any problem or concern you report about the operation of your smoke and CO alarm.

Your residence has been provided with a smoke alarm(s) that is:

- Battery-operated Hardwired
 Hardwired with battery back-up

Your residence has been provided with a CO alarm(s) that is:

- Battery-operated Hard Hardwired
 Plug-in Hardwired with battery back-up

**Your residence has been provided with a combination
smoke/CO alarm(s) that is:**

- Battery-operated Hardwired
 Hardwired with battery back-up

A summary of the main features and the operation of the smoke alarm and CO alarms have been prepared by the landlord and are attached.

For your protection, you are encouraged and required to take part in ensuring that the smoke alarms and CO alarms are operational and to co-operate with the landlord in carrying out the necessary testing and maintenance.

SMOKE ALARM AND CARBON MONOXIDE ALARM MAINTENANCE INFORMATION FOR TENANTS AND OCCUPANTS IN RENTAL UNITS

Here are some steps that you can take:

- ◆ Notify the landlord when the low battery signal is activated so that the landlord can make arrangements for replacement of the battery.
- ◆ Notify the landlord when the “end of life” signal is activated so that the landlord can make arrangements for replacement of the unit.
- ◆ Notify the landlord if the “power on” indicator goes out so that the landlord can arrange for appropriate repairs or replacement of the unit.
- ◆ Notify the landlord if the smoke alarm or CO alarm is damaged so that the landlord can make arrangements for the repair or replacement of the unit.
- ◆ When you have been absent for seven or more days (such as vacation), arrange for the smoke alarm and CO alarms to be tested by the landlord to ensure that they are operable (on battery-operated smoke alarms and CO alarms only).
- ◆ Notify the landlord of any electrical problems that may affect the operability of electrically wired smoke alarms and CO alarms.

Contact your local fire department if you have serious concerns about the effective operability of your smoke alarms or CO alarm that are not rectified through dealing with your landlord.

The Ontario Fire Code specifies that “**No person shall disable a smoke alarm**” and “**No person shall disable a carbon monoxide alarm**”. A tenant or any other person who disables a smoke alarm or CO alarm is guilty of a provincial offence and may be subject to a fine, or imprisonment, or both.