

Lesson Topic 2.3

Post-Fire Atmospheric Testing

Introduction

As Gas Free Engineering Personnel will be required to know the procedures for Post-Fire Atmospheric Testing.

Enabling Objectives

- ◆ **Describe procedures for post fire atmosphere testing in accordance with Gas Free Engineering, NSTM 074 Vol 3 and Shipboard Firefighting, Chapter 555, Vol.1**

Purpose

- ◆ To certify the atmosphere of a space safe after the extinguishing of a fire.

Testing responsibilities

- ◆ Performed by the GFE/GFEA and designated assistants.
- ◆ Tests may be conducted by GFEPs with results evaluated by the GFE/GFEA.

Testing procedures

- ◆ Testing must commence as soon as possible in surrounding areas in order to move the smoke/toxic gas boundaries inward as soon as possible.

Testing procedures

CAUTION: All spaces should be desmoked before atmospheric testing is started because oxygen analyzers do not operate reliably if the sensor is exposed to excessive moisture or is in contact with post-fire atmosphere particulate.

Testing PROCEDURES

- ◆ One series of atmospheric tests in sequence of oxygen, combustible gases and toxic gases is required.
 - ◆ Oxygen
 - ◆ Combustible gases
 - ◆ Toxic gases
 - ◆ Types of toxic gases to test for will depend on the nature of the space and fire.

Testing PROCEDURES

- ◆ Toxic testing for class "A" and "C" fires, test for:
 - ◆ Carbon Dioxide
 - ◆ Carbon Monoxide
 - ◆ Hydrogen Chloride
 - ◆ Hydrogen Cyanide

NSTM 074V3, Appdx:C-18, encl: 8

Testing PROCEDURES

- ◆ Toxic testing for class "B" fires, test for:
 - ◆ Hydrocarbons
 - ◆ Carbon Dioxide
 - ◆ Carbon Monoxide
 - ◆ Hydrogen Chloride
 - ◆ Hydrogen Cyanide

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Testing PROCEDURES

NOTE: If Halon 1301 has been discharged, a test for hydrogen fluoride shall also be conducted.

Locations for atmospheric testing

- ◆ During a fire, combustible or toxic gases spread with smoke and heat.
- ◆ Atmospheric testing should be conducted in the fire space and at locations high, center and low in the affected compartment.

Locations for atmospheric testing

- ◆ **Small fires**
 - ◆ A single test series at one location in the fire space may be adequate and overboard desmoking may not be necessary.

Locations for atmospheric testing

◆ Growing fires

- ◆ A single test site is not sufficient even when the ventilation system remains undamaged.
- ◆ After desmoking, tests should be conducted at least one site in the fire space and at fire sites, high, center and low.
- ◆ Each level adjacent to the fire area.
- ◆ Test where poor ventilation and gas accumulation is suspected.

Locations for atmospheric testing

- ◆ Large Fires
 - ◆ Extensive testing will probably be required.

Review and Summary

Review and summary

- ◆ Purpose of Atmospheric Testing
- ◆ Testing responsibilities
- ◆ Testing procedures
- ◆ Locations for atmospheric testing

ANY QUESTIONS?