

FIRE

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Introduction

- Forrestal Fire
- M/V Conception - 9/2/2019
- Smoking Belt - USVI Winter Class, 2019
- Dozier's Marina, Urbanna, VA - 2/29/2016

Introduction

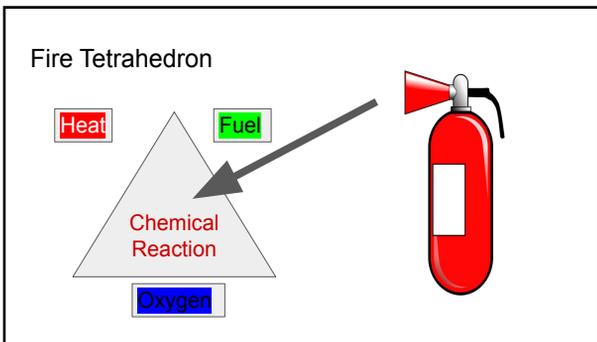
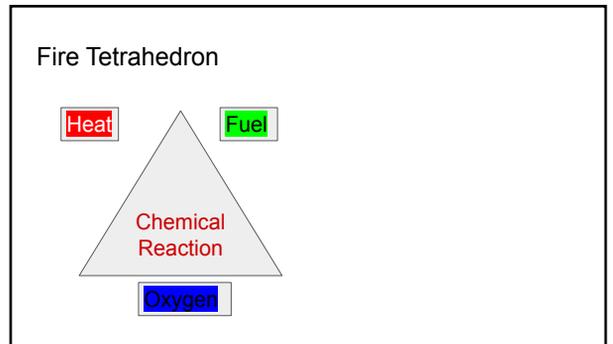
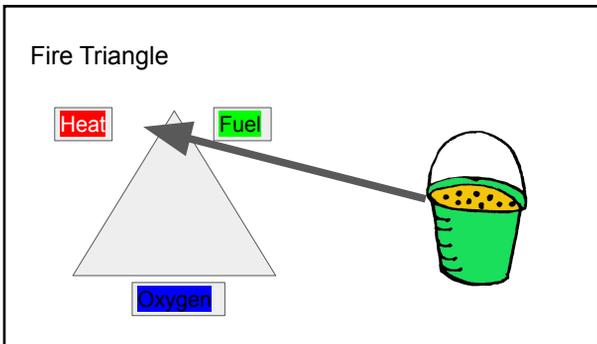
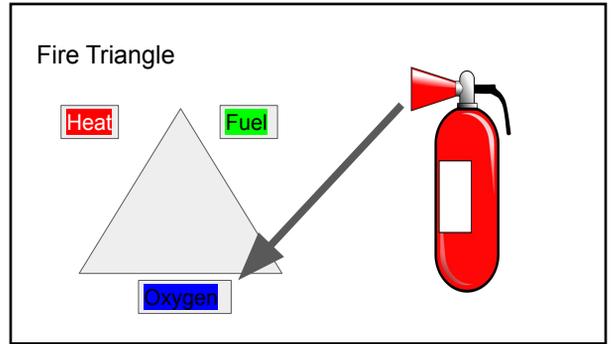
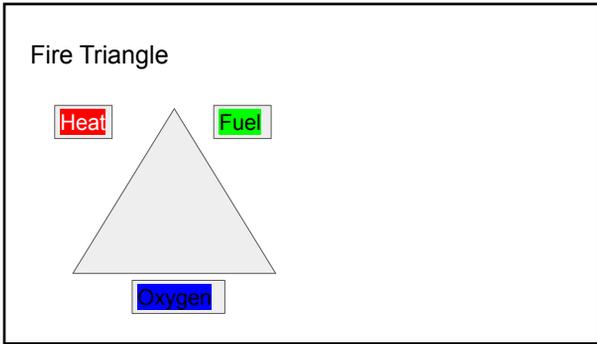
- Personal introduction
- Maryland School Youtube Video - Offshore Sailing Emergencies
- 104 Training Manual
- Establish parameters
 - Midsize to Large Cruising Boat
 - Coastal Or Near Coastal Sailing
 - Help Is Not Immediately Available, But Can Arrive in Two to Ten Hours

Resources

- Seaworthy - Essential Lessons From BOATUS's 20-year Case File Of Things Gone Wrong
- BOATUS Foundation Youtube Channel
- Crash Test Boat Youtube Channel
- USCG - <https://www.boatingsafety.org/boatingsafety/putting-out-boat-fire>
- Soundings - <https://www.soundingsonline.com/boat-shop/fire-on-board-heres-what-to-do>

Types of Fire

- Fire tetrahedron
- Classic - ABCD
- Actual
 - Fuel
 - Source of heat



- ### Classic Fire Classifications
- Alpha - solid combustible organic fuels that leave ashes
 - Wood
 - Paper
 - Food
 - Cloth
 - People

Classic Fire Classifications

- Alpha - solid combustible organic fuels that leave ashes
- Bravo - vapor-air mixture over a liquid or semi-solid fuel
 - Gasoline
 - Oil
 - Grease
 - Paint
 - Propane
 - Diesel

Classic Fire Classifications

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- Bravo - vapor-air mixture over a liquid or semi-solid fuel
- Charlie - heat or spark from a live electrical source, with either solid or liquid fuel

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- Alpha - solid combustible organic fuels that leave ashes
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- Charlie - heat or spark from a live electrical source, with either solid or liquid fuel
- Delta - burning metals
 - Titanium
 - Aluminum
 - Magnesium

Classic Fire Classifications

- Alpha - solid combustible organic fuels that leave ashes
- Bravo - vapor-air mixture over a liquid or semi-solid fuel
- Charlie - heat or spark from a live electrical source, with either solid or liquid fuel
- Delta - burning metals
- Kilo - cooking oils and greases (commercial)

Actual Fire Classification

- Type of Fuel
 - Organic Solid
 - Organic Liquid
 - Powdered Metal

Actual Fire Classification

- Type of Fuel
- Source of Heat - continuous vs transitory

Fire Fighting Agents

- Dry Powder
- Gaseous
- CO2
- Fire blanket
- Water

Fire Fighting Agents

- Dry Powder
 - Usually based on Sodium Bicarbonate
 - Works by interrupting the fire process
 - Chemically inert, but very messy
 - Not life-threatening
 - Ideal for liquid fuel fires
 - Works on electrically charged fires
 - May work on solid fuel fires
 - Must be directed at fire
 - Cheap and convenient

Fire Fighting Agents

- Gaseous - other than CO2
 - Halon replacements
 - Works by interrupting the fire process
 - Not life-supporting!
 - Ideal for electrically charged fires
 - Works on solid and liquid fuel fires
 - Will saturate a space
 - Excellent in enclosed spaces like engine compartments
 - Expensive

Fire Fighting Agents

- CO2
 - Liquid in canister, gaseous in use
 - Works by smothering the fuel
 - Not life-supporting!
 - Ideal for electrically charged fires
 - Works on solid and liquid fuel fires
 - Will saturate a space
 - Excellent in enclosed spaces like engine compartments
 - Difficult to find

Fire Fighting Agents

- Fire Blanket
 - Fiberglass or wool blanket
 - Works by smothering the fuel
 - Ideal for galley fires and people
 - Works on solid and liquid fuel fires
 - Requires close proximity to fire
 - Inexpensive

Fire Fighting Agents

- Water
 - Usually very handy
 - Works by smothering the fuel and by cooling
 - Good for solid fuel fires
 - Very bad on liquid and electrical fires
 - Requires removal, usually at the same time as application
 - Inexpensive

Fire Fighting Tool Kit

- Hammer
- Crowbar/Pry Bar
- Key Saw
- Heavy Gloves
- Duct Tape
- Tongs
- Screwdrivers

Sources of Fires

- 12 Volt Electrical - 44%
- Engine & Transmission Overheating - 24%
- 110 Volt Electrical - 11%
- Fuel Leaks - 8% (Gasoline - 93%)
- Miscellaneous - 7%
- Unknown - 5%
- Galley - 1%

Immediate Actions - Fire Source Known

- Alert the crew
- Grab fire extinguishers - Do NOT immediately deploy!
- Grab PFDs, Ditch Bag, tool kit and EPIRB
- Call for help - Mayday
- Fight fire

From the point of ignition, you have between 20 and 90 seconds to start fighting the fire

Immediate Actions - Fire Source Unknown

- Alert the crew
- Grab PFDs, ditch bag, tool kit and EPIRB
- Call for help - Pan-pan/Mayday
- Find the fire
- Prepare fire extinguishing agent
- Fight fire

Fighting the Fire

- Do not react - THINK!
- Minimize the number of people below
- Assign someone to communications, if possible
- If electrical, turn breakers OFF first, before securing the batteries
- Stop engine before securing batteries
- If in the engine area, do NOT open the engine bay wide
- Galley/Salon/Berthing - fight to the fire

Fire Out

- Set reflash watch
- Dewater, if necessary
- Ventilate, if necessary
- Assess need for more assistance
- Assess damage
- Deal with repercussions

Random Points

- Automatic vs. Portable Fire Extinguishers
 - Engine Room/Battery Compartments
 - Elide Balls
- How Many Is Enough?
 - One for each sleeping area
 - One for each engine space
 - One for the galley
 - Two in the cockpit

Random Points

- Separate Electrical Connection for Radio
 - Consider multiple radios or Remote Access Mics
 - Separate battery for radio
- Multiple Control Switches for Propane
 - If propane bottle is not readily accessible
 - At or near wheel
 - Normally on

Random Points

- Spontaneous Combustion
 - Low Ignition Temperature Fuel (Cotton Rags, e.g.)
 - Accelerant (Cooking oil, grease or paint)
 - Heat trapped by a container
- Cleanliness Is Safety

Wrap Up

- Plan Ahead
- Learn To Use Your Gear
- Train Your Crew
- Have A Plan Each Time You Leave The Dock
- Practice

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Questions?