


Emergency Response




The Basics

- ◆ Evacuate students in immediate danger.
 - ◆ Activate fire alarm.
 - ◆ Perform fire drill duties.
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Reducing The Risk



Classroom Safety

- ◆ Avoid portable heaters.
 - ◆ Keep combustible material away from heaters.
 - ◆ Check electrical appliances and cords regularly.
 - ◆ Keep doorways clear.
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- A decorative silhouette of a mountain range in a teal color, located in the bottom right corner of the slide.

Fire Drills

- ◆ Always take seriously and evacuate immediately.
- ◆ Ensure staff are aware of evacuation procedures and duties
- ◆ Understand the operation of fire suppression equipment.



Storage Area

- ◆ Away from process and production area.
- ◆ Keep container closed when not being used.
- ◆ Well ventilated.
- ◆ Free of ignition sources.
- ◆ Cool and dry.
- ◆ Adequate firefighting equipment and spill clean-up material.
- ◆ Away from elevators, exits and aisles.
- ◆ Accessible by firefighters
- ◆ Labeled.

FUEL

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CHAIN REACTION

FIRE TETRAHEDRON



CLASS



'A'



FIRE

TYPES OF FIRES

COMMON COMBUSTIBLES

- * TRASH
- * WOOD
- * PAPER

EFFECTIVE AGENTS

- * WATER
- * MULTI-PURPOSE
DRY CHEMICAL
- * FOAMS
- * CLEAN AGENT



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FIRE TETRAHEDRON

Remove Heat

Solid Fuels

- ◆ Preheat Phase-heating up to flash point.
- ◆ Distillation Phase-mixing of flammable gasses with oxygen and ignited.
- ◆ Charcoal Phase-not enough flammable gas to create a persistent flame.

CLASS

B

'B'



FIRE

TYPES OF FIRES

**FLAMMABLE
LIQUIDS AND GASES**

- * GREASE
- * GASOLINE
- * LUBRICATING OILS
- * LNG

EFFECTIVE AGENTS

- * DRY CHEMICAL
- * FOAMS
- * CLEAN AGENT
- * CARBON DIOXIDE (CO₂)

What Is Burning ?

- ◆ Flammable and combustible liquids themselves do not burn. It is their vapours and the air which creates the fuel.

Flash Point

The lowest temperature at which the liquid will release enough vapour to be ignited

Liquids

Flammable Liquids

- ◆ Flash point below 37.8C (100F)

Combustible Liquids

- ◆ Flash point above 37.8C (100F) & below 93.3C (200F)



Flammable or Explosive Limits

Gasoline

- ◆ Lower Explosive Limit ◆ 1.4%
- ◆ Lower Explosive Limit ◆ 7.6%
- ◆ Upper Explosive Limit
- ◆ Lower Explosive Limit

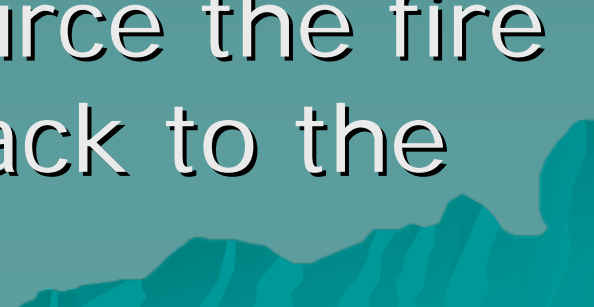
Autoignition Temperature

- ◆ Most Flammable or Combustible Liquids.
- ◆ 300C to 550C
- ◆ Ethyl Ether
- ◆ 160C

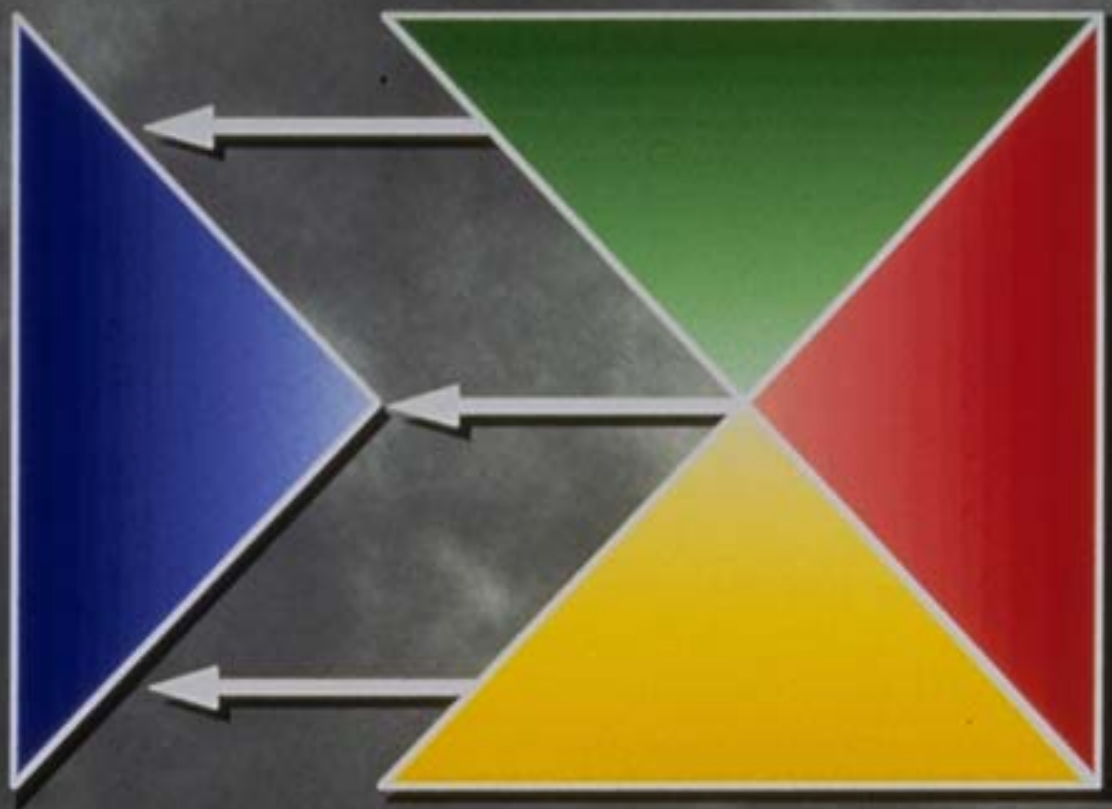
Flashback

When vapours from a flammable or combustible liquid are heavier than air, they can travel and collect in low areas.

If this vapour trail reaches an ignition source the fire could travel back to the source liquid.



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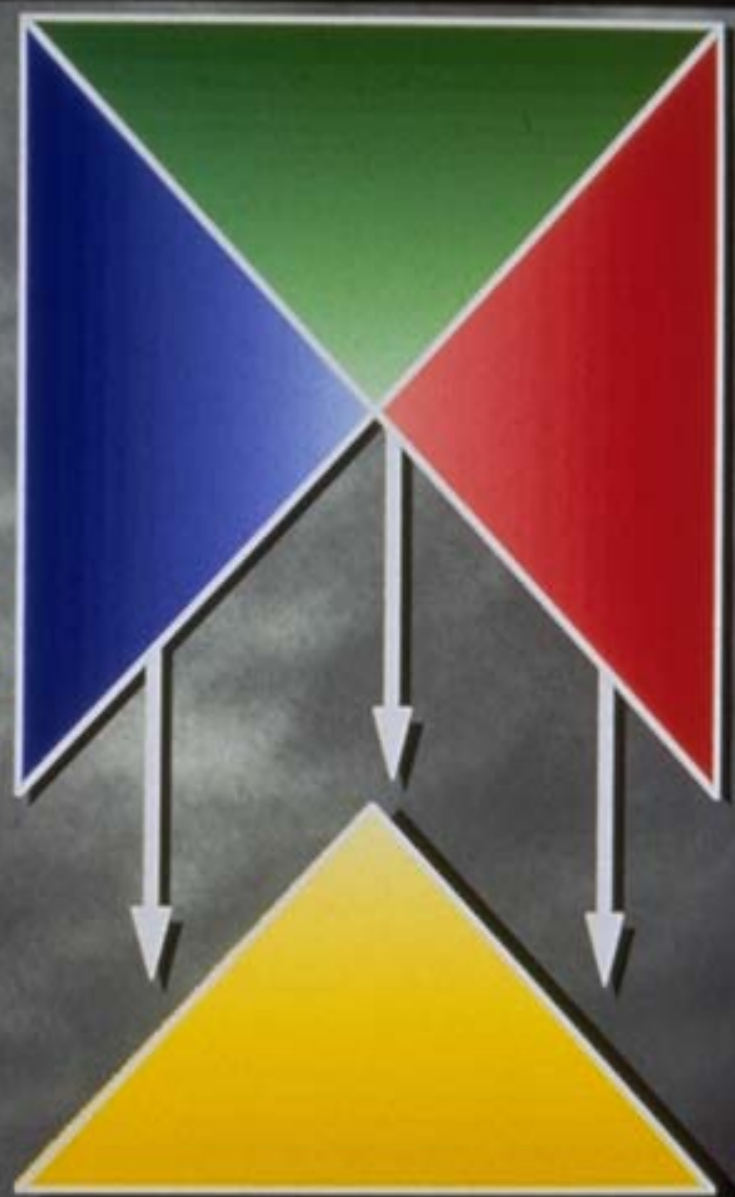


FIRE TETRAHEDRON

Remove Oxygen


FIRE TETRAHEDRON


Remove the Chain Reaction




CHAIN REACTION

Ignition Sources


- ◆ Sparks from electrical tools.
 - ◆ Sparks, arcs and hot metal from welding.
 - ◆ Smoking
 - ◆ Open flames from torches or heating units
 - ◆ Hot surfaces i.e. boilers, steam pipes, ovens, driers.
 - ◆ Grinding or cutting operations.
 - ◆ Static electricity
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- ◆ Substitution can be the best way to avoid or reduce the potential hazard.
 - ◆ Obtain MSDS Sheets for current and their potential replacements.
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Basic Safety Practices

- ◆ Read MSDA Sheets.
 - ◆ Store, handle and use flammable and combustible liquids in a well ventilated area.
 - ◆ Bond and ground metal containers when transferring liquids
 - ◆ Housekeeping.
 - ◆ Wear PPE.
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Basic Safety Practices

- ◆ 1L capacity used for flammable liquids.
 - ◆ 5 L capacity used for combustible liquids.
 - ◆ All containers have WHMIS labels.
 - ◆ Never use plastic or glass containers.
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CLASS



'C'



FIRE

TYPES OF FIRES

ELECTRICAL EQUIPMENT

- * COMPUTERS
- * FUSE PANELS
- * ELECTRICAL MOTORS
- * SWITCH GEAR

EFFECTIVE AGENTS

- * DRY CHEMICAL
- * CLEAN AGENT
- * CARBON DIOXIDE (CO₂)

FUEL



FIRE TETRAHEDRON

Remove Fuel



CLASS 'D' FIRE



TYPES OF FIRES	EFFECTIVE AGENTS
COMBUSTIBLE METALS	* DRY POWDER
* MAGNESIUM	* DRY SAND
* TITANIUM	
* ZIRCONIUM	
* SODIUM	
* LITHIUM	





Rules for Fighting Fires



Success Requires a Good Plan




What Firefighters Wear

- ◆ Flash Hood
- ◆ Boots
- ◆ Bunker Suit
- ◆ Gloves
- ◆ SCBA
- ◆ Helmet
- ◆ Eye Protection



The Basics

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 - ◆ Activate fire alarm.
 - ◆ Perform fire drill duties.
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Evacuation of Building

- ◆ Close all doors and hallway doors to prevent air movement and spread of smoke.
- ◆ DO NOT PANIC !!!!



Rigid Framed Skeleton Frame Buildings

- ◆ Rigid frame is a type of skeleton frame
 - Uses rigid joints
 - joint members cannot rotate
 - Stress transferred from member to member
- ◆ May fail as a unit which may mean



Pinned Framed Skeleton Frame Buildings

- ◆ Pinned frame is another type of skeleton frame
 - Joints are pinned
 - Allows for possible rotation
 - If one member bends, may break connection
- ◆ May result in localized collapse




Lightweight Materials

Engineered wood

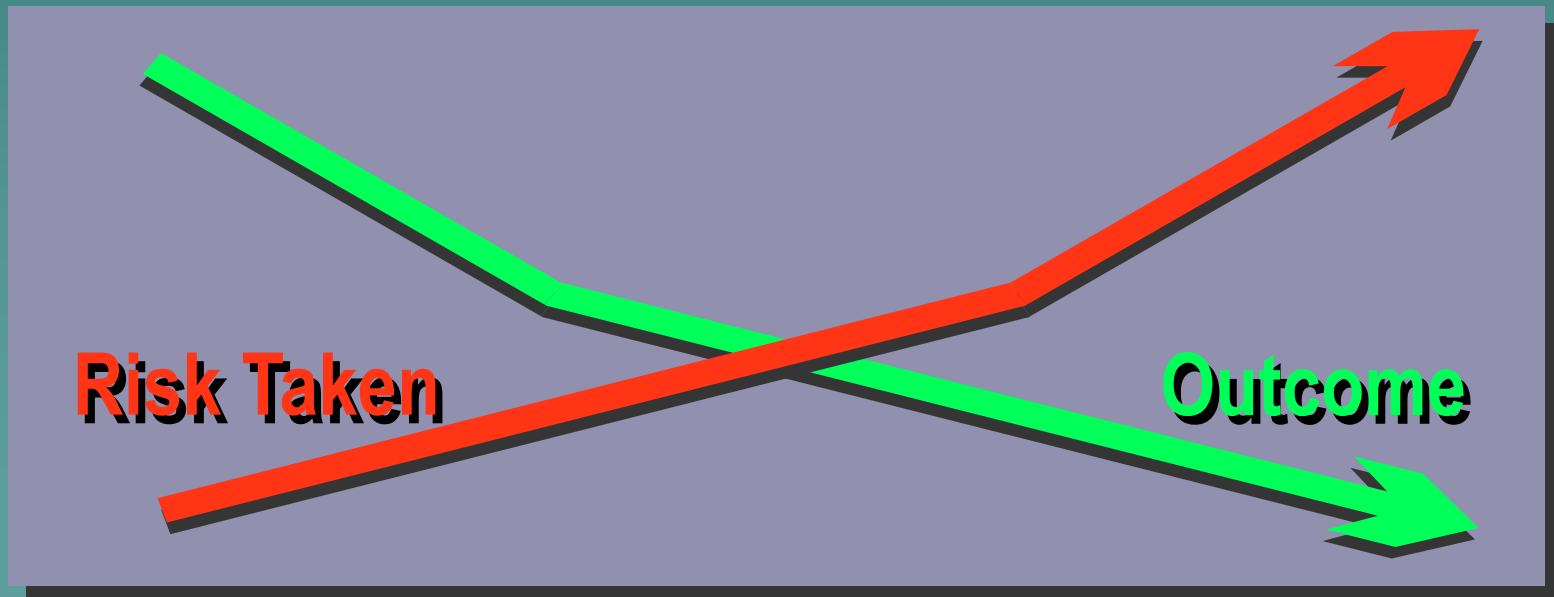


Plastics

- ◆ PVC.
 - ◆ ABS.
 - ◆ Polystyrene.
 - ◆ Styrofoam.
 - ◆ Nylon.
 - ◆ Synthetic rubber.
 - ◆ Tupperware.
 - ◆ Formica.
 - ◆ Lexan.
 - ◆ Teflon.
 - ◆ Gore-Tex.
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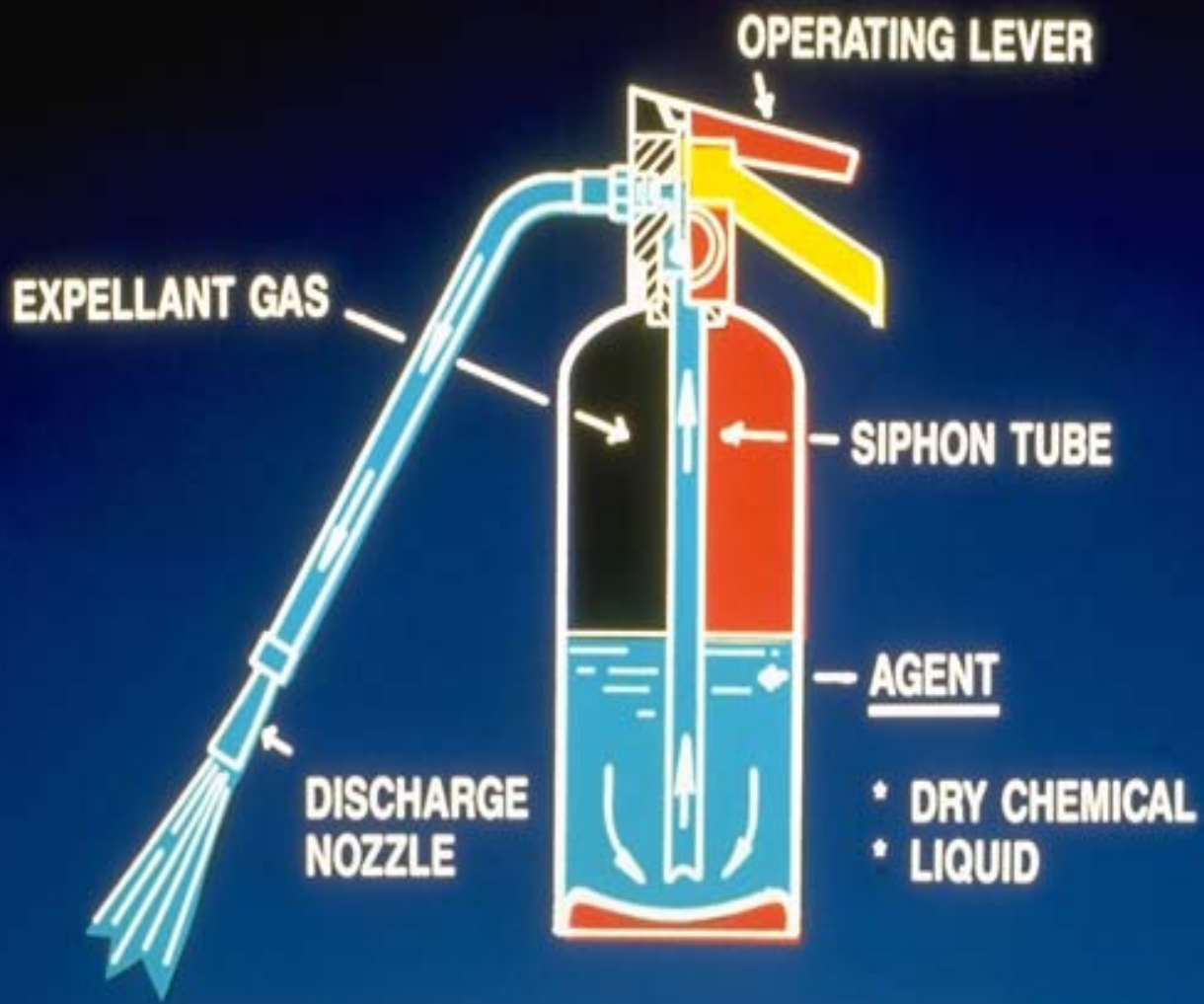
Risk Benefit Analysis

- ◆ Risks Taken vs. Successful Outcomes Have An Inverse Relationship.



Will I Fight the Fire?

1. Identify what is burning.
2. Do you have the appropriate extinguisher?
3. Is the fire spreading rapidly?
4. Is there toxic smoke that you could inhale?
5. ALWAYS HAVE YOUR EXIT BEHIND YOU !!



STORED PRESSURE EXTINGUISHER

P.A.S.S.

1. Pull the pin.
2. Aim the nozzle.
3. Squeeze the trigger.
4. Sweep from side to side.

Any Questions

