

Module: Public Health Disaster Planning for Districts

Organization: East Africa HEALTH Alliance, 2009-2012

Author(s): Dr. Joseph Chuwa (MoH, Tanzania) (Lead Author), Dr. Christopher Orach-Garimoi (MakSPH), Dr. Roy William Mayega (MakSPH), Dr. Simon Mamuya (Muhimbili Univ. SPH), , Dr. Tabu Simiyu (Moi Univ. SPH), Mr. Mike Renny Wafula (OPM, Uganda), Dr. G. Kabagambe (LIPHEA)

Resource Title: Session 3.1 Fire

License: Unless otherwise noted, this material is made available under the terms of the **Creative Commons Attribution 3.0 License**:
<http://creativecommons.org/licenses/by/3.0/>

We have reviewed this material in accordance with U.S. Copyright Law **and have tried to maximize your ability to use, share, and adapt it.** The citation key on the following slide provides information about how you may share and adapt this material.

For more information about **how to cite** these materials visit <http://open.umich.edu/privacy-and-terms-use>.

Any **medical information** in this material is intended to inform and educate and is **not a tool for self-diagnosis** or a replacement for medical evaluation, advice, diagnosis or treatment by a healthcare professional. Please speak to your physician if you have questions about your medical condition.

Viewer discretion is advised: Some medical content is graphic and may not be suitable for all viewers.



Attribution Key

for more information see: <http://open.umich.edu/wiki/AttributionPolicy>

Use + Share + Adapt

{ Content the copyright holder, author, or law permits you to use, share and adapt. }



Public Domain – Government: Works that are produced by the U.S. Government. (17 USC § 105)



Public Domain – Expired: Works that are no longer protected due to an expired copyright term.



Public Domain – Self Dedicated: Works that a copyright holder has dedicated to the public domain.



Creative Commons – Zero Waiver



Creative Commons – Attribution License



Creative Commons – Attribution Share Alike License



Creative Commons – Attribution Noncommercial License



Creative Commons – Attribution Noncommercial Share Alike License



GNU – Free Documentation License

Make Your Own Assessment

{ Content Open.Michigan believes can be used, shared, and adapted because it is ineligible for copyright. }



Public Domain – Ineligible: Works that are ineligible for copyright protection in the U.S. (17 USC § 102(b)) *laws in your jurisdiction may differ

{ Content Open.Michigan has used under a Fair Use determination. }



Fair Use: Use of works that is determined to be Fair consistent with the U.S. Copyright Act. (17 USC § 107) *laws in your jurisdiction may differ

Our determination **DOES NOT** mean that all uses of this 3rd-party content are Fair Uses and we **DO NOT** guarantee that your use of the content is Fair.

To use this content you should **do your own independent analysis** to determine whether or not your use will be Fair.

Fire

Compiled By The Eastern Africa Disaster
Management Training Core Team

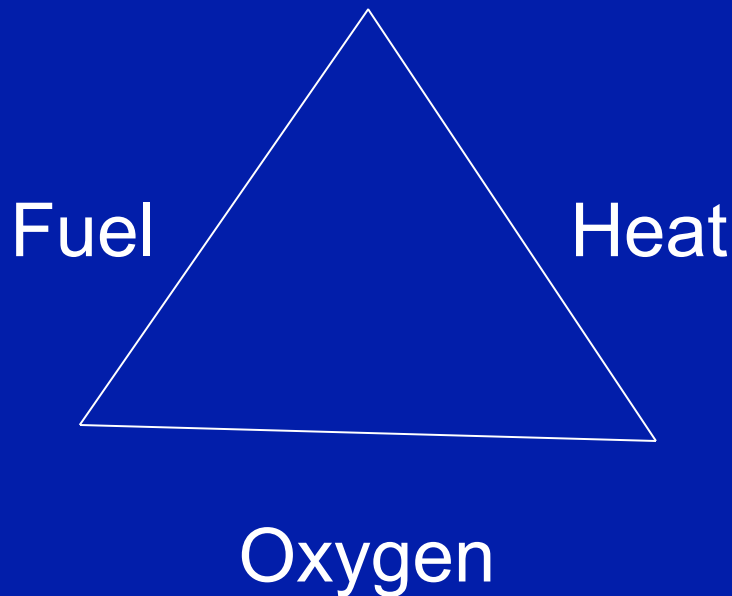
Narrated by Dr. Roy William Mayega

Understanding Fire: Definition

- The uncontrolled burning of settlements, forests, vehicles and vessels
- A very frequent form of hazard in Eastern Africa
- May be accidental or deliberate (arson)
- May be natural or technological

Elements of Fire

Represented by a triangle:



If any of the three is removed then fire will not exist

Impact of fire

- Burns and Shock
- Disabilities and Deaths
- Damage and loss of property
- Environmental degradation and pollution

Factors that influence fire

- Vegetation and weather
- Combustibles and toxicity of flammables
- Absence of warning and Lack of knowledge
- Magnitude of exposure and age of victim
- Availability of fire fighting equipment
- Housing characteristics and absence of exits
- Access to nearest health facility

Causes of Fires

- i) Electrical causes
 - Broken and dirty insulators
 - Loose flexible wiring
 - Perishable or damaged insulation of wiring
 - Bad connections e.g. overloading
 - Incorrect fusing and poor earthing
 - Current traveling via a gas pipe

Causes of Fires

- i) Human causes
 - Smoking
 - Cooking and Unattended fire
 - Appliances left on cookers or irons
 - Aerosols and flammable liquids
 - Careless handling and Playing with fire
 - Arson
 - Misuse of appliances

Class A Fires

- Resulting from ordinary combustible materials such as wood, paper, grass, cotton (clothes) etc.
- **Extinguishing media:** Water, dry chemical powder, sand and fire beating

Class B Fires

- Result from flammable liquids such as kerosene, petrol, spirit, cooking fats etc.
- **Extinguishing media:** Foam and Dry chemical power

Class C Fires

- Involve gases such as methane, propane, butane etc.
- Gases can produce explosions
- **Extinguishing methods:** First close the valve of the container if possible
 - You can also use dry chemical powder

Class D Fires

- Result from in metal heating such as Aluminum, Magnesium etc.
- **Extinguishing media:** Dry chemical powder



 Freedom House, flickr

Electrical Fires

- Do not constitute a class on their own
- It becomes either a class A,B,C or D fire
- **Extinguishing methods:** Cut off the electricity then use extinguishing media
 - Recommended media is Dry chemical powder or carbon dioxide

Methods of Fire Extinguition:

- i) Smothering: Process of removing oxygen (by blanketing)
- ii) Starvation: Process of removing fuel (by removing un burnt materials)
- iii) Cooling: is the process of removing heat (spraying water)



 Omar Infante-Ramos, flickr

Demonstration: Portable Fire Extinguishers

- We shall have a brief demonstration on colour codes for fire extinguishers and their use
- **Question:** *Examine the different types of fire extinguishers you see and read their labels*
 - *What is their content?*
 - *What classes of fires are they indicated for?*
 - *Kindly check the expiry dates and service situation*
- If possible, we shall also have a demonstration on the actual use of an extinguisher

Portable Fire Extinguishers

- Are the 'FIRST AID FIRE FIGHTING APPLIANCES'(FAFFA)
- Normally operated by one man
- Types:
 - Water – Red label
 - Foam – cream label
 - Dry chemical powder – blue label
 - Carbon dioxide – black label
- Nowadays most extinguishers are red and are only differentiated by a colour code

Safety Implications of Hand Held Extinguishers

- Always note the following hazards:-
 - Electrocution. Water/foam extinguishers are good conductor of electricity
 - Inhalation of dry chemical powder, smoke and toxic gases may cause respiratory problems
 - Frostbite from Carbon dioxide
 - Failure rate higher; Weight
 - Noise, especially carbon dioxide type
 - Impaired vision e.g. dry chemical powder

Pre Hospital Fire Management

- Organize and establish control authority
- Extinguish the fire
- Conduct Rapid Needs Assessment
- Search and Rescue and evacuation of victims
- Initial triage and First Aid to the victims
- Transport victims to health facility
- Use available resources and mobilize for others if needed

Hospital Based Operations

- Activate Hospital contingency plans
- Assess magnitude, severity, number of victims
- Establish advance teams to the fire site
- Establish receiving mechanism and prepare admission ward
- Identification of burn emergency team
- Treat and manage victims according to degree of burns

Hospital Based Operations

- Refer the patient to higher health institutions
- Establish special burn treatment centres
- Alleviate shock by fluids, transfusion, surgery etc
- Certify death if any and provide mortuary facilities
- Keep records and inform appropriate authorities
- Monitoring, evaluation and rehabilitation

Fire Prevention

- What factors increase fire risk and how do you think fires can be prevented in institutions in your district?

Fire Prevention

- Building standards that incorporate hazard reduction
- No smoking signs
- Orderly arrangements of goods to avoid spontaneous ignition
- Provide space between goods and avoid congestion in dormitories
- Fire segregated walls where applicable
- Preventive measures against easy spread of fire

Fire Prevention

- Good House keeping: Regular checks on practices especially in vulnerable groups like schools
- Create awareness about the impact of fires to the community
- Collaborate with Fire and Rescue departments
- Reinforce legislations which control the buildings requirements
- Set bylaws on preventing bush fires

Fire Protection

- Installation of fire equipment inside and outside
- Fire escapes, exits and escape signs
- Protect building from extensive damage resulting from fires
- Aim is to protect people and properties but assure the continuity of operations

Fire Protection

- Hand appliances :Fire Extinguishers; Buckets of sand
- Fixed installations (using water) :Risers; Hose reels; External private hydrants
- Fixed installations (not using water): Foam; Gases; Dry chemical powder
- Automatic Sprinkler systems: Detect and extinguish fires, give information, prevents fire spread. Discharge water/foam/CO₂ in form of spray



Fire Drills

- Should cover:-
 - Fire alarm effectiveness
 - Timelines of notification
 - The fire teams conformance with established fire procedures
 - Safe evacuation and assembly
- Emphasis on orderly evacuation rather than on speed
 - Participants assemble to a predetermined location
 - Remain there till a roll-call and dismissal signal is given

Evacuation

- Removal of people from an area of danger to a safe area in an orderly manner to prevent confusion and panic
 - Risk of injuries should be minimized by following the required instructions
 - Routine Emergency drills (evacuation and assembly) every 3 months
 - Can be announced or unannounced drills

Evacuation

- Evacuation Assembly Point:
 - Selected area for workers (staff) to run and assemble
 - Should be pre-determined by the staff
 - If a staff member is not seen during the roll call then fire team conducts search and rescue
- Rendezvous point for evacuation:
 - A meeting point for first responders such as fire engines, ambulance, fighters, mobiles etc.
 - Should also be predetermined
 - Can be changed due to wind direction and fire situation

Thank you for the attention!



 Loco Steve, flickr

Additional Source Information

for more information see: <http://open.umich.edu/wiki/CitationPolicy>

Slide 14, Image 1: Freedom House, "Syrians gather next to a burning building in the centre of Idlib in northwestern Syria on February 24, 2012", flickr, <http://www.flickr.com/photos/syriafreedom/6826209982/>, CC: BY 2.0, <http://creativecommons.org/licenses/by/2.0/>.

Slide 17, Image 1: Omar Infante-Ramos, "Fire!", flickr, http://www.flickr.com/photos/omar_infante-ramos/2214054587/, CC: BY-NC-SA 2.0, <http://creativecommons.org/licenses/by-nc-sa/2.0/>.

Slide 29, Image 1: longhairthai.com, "Fire Fighters In Action", flickr, <http://www.flickr.com/photos/longhairthai/3280485878/>, CC: BY-NC-ND 2.0, <http://creativecommons.org/licenses/by-nc-nd/2.0/>.

Slide 33, Image 1: Loco Steve, "Pearl river fire..", flickr, <http://www.flickr.com/photos/locosteve/4349003896/>, CC: BY 2.0, <http://creativecommons.org/licenses/by/2.0/>.