

# ENVIRONMENTAL SAFETY INDEPENDENT ASSIGNMENT

-A graded quiz will be given 5/14/2021 on Edvance 360 at 0750-0810  
No Notes Allowed



MI 116: Patient Care & Pharmacology  
for Medical Imaging Professional

# TWO NAMES TO KNOW....

## OSHA

- Occupational Safety and Health Administration
- Assures safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance.

## EPA

- Environmental Protection Agency
- To protect human health and the environment.



***There are 2 key numbers all staff must know:***

- **Call 8222** to urgently **report** a safety issue (Security Command Emergency Center)
- **Call 8600** for emergency **updates** on an active emergency

***These numbers are located under the handset on all hospital phones.***

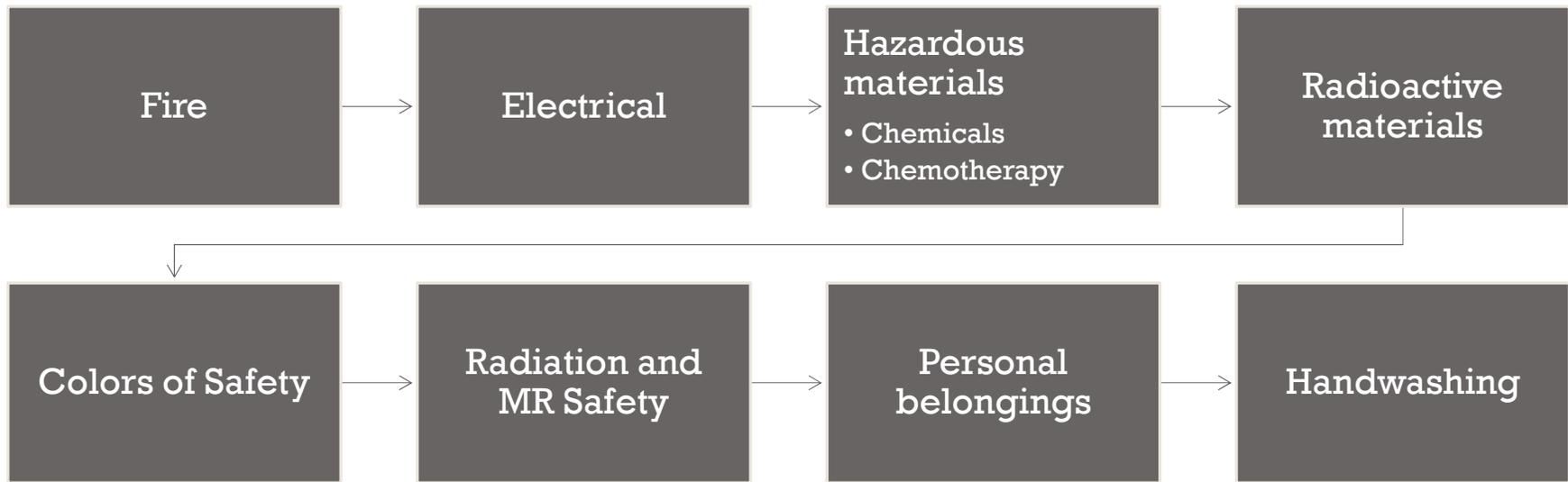


Reading Hospital

TOWER HEALTH

Advancing Health. Transforming Lives.





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# AREAS OF FOCUS...





**FIRE**



# THE FIRE TRIANGLE



- The Fire Triangle is a simple model used to understand the ingredients necessary for most fires.

- Triangle illustrates a fire requires three elements:

**Heat** - to reach ignition temperature

**Fuel** - or combustible material to feed the fire

**Oxygen** - to sustain combustion

Together, they produce the **Chemical Reaction** that is **Fire**.

- The fire is prevented or extinguished by removing anyone of the three elements. Keep fuel and ignition sources separate.
- A fire naturally occurs when the elements are combined in the right mixture.



# FUEL CLASSIFICATIONS



- Fires are classified according to the type of fire that is burning. Basically what type of material is on fire, i.e. paper, grease, electrical equipment etc.
- It's very important to understand the three different fire or fuel source classifications. Understanding this will allow you to correctly use the right fire extinguisher.
- If you were to use the wrong type of fire extinguisher on the wrong class of fire, you may or may not be able to control or even extinguish the fire.



# FUEL CLASSIFICATIONS



## A Trash Wood Paper

A



- wood
- cloth
- paper
- rubber
- many plastics

## B Liquids Grease

B



- gasoline
- oil
- grease
- tar
- oil-based paint
- flammable gases

## C Electrical Equipment

C



- energized electrical equipment
- computer
- TV
- radio





# FUEL CLASSIFICATIONS

- Most fire extinguishers will have a picture label telling you which types of fires the extinguisher is designed to fight.
- For example, a simple water extinguisher might have a label like this:



Which means it should only be used for Class A fires.





# TYPES OF FIRE EXTINGUISHERS

- Different types of fire extinguishers are designed to fight different classes of fires.
  
- The three most common types of fire extinguishers are:
  1. Water (Class A)
  2. Carbon Dioxide (CO<sub>2</sub>) (Class BC)
  3. Dry Chemical (Class ABC, BC, DC)



# Extinguishers contain different fire suppressants and are used on certain classes of fires:



**A**  
pressurized  
water



**B C**  
carbon dioxide



non-magnetic  
**A B C**  
dry chemical (top)  
water mist

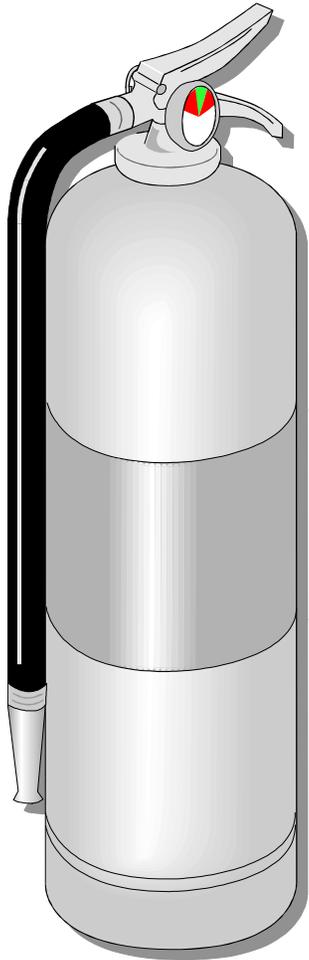


**A B C**  
halon



# TYPES OF FIRE EXTINGUISHERS

## PRESSURIZED WATER



A Trash Wood Paper



B Liquids Grease



C Electrical Equipment

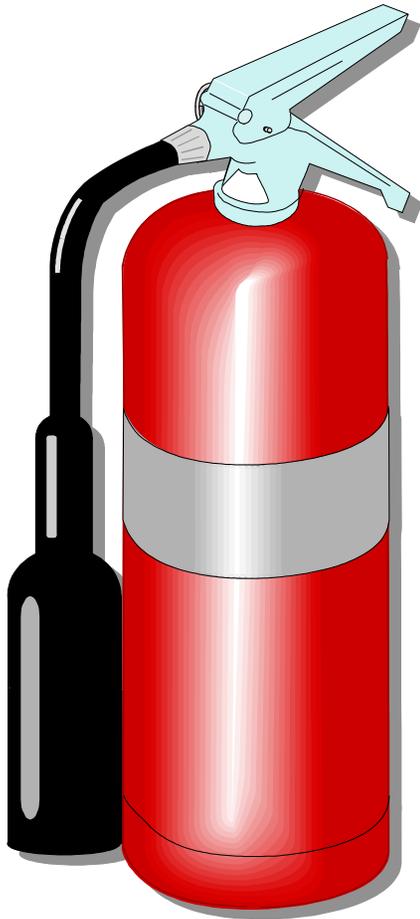


- **Class “A” fires only.**
- **2.5 gal. water at 150-175 psi (*up to 1 minute discharge time*).**
- **Has pressure gauge to allow visual capacity check.**
- **30-40 ft. maximum effective range.**
- **Extinguishes by *cooling* burning material below the ignition point. Taking away the *heat* element from the fire.**



# TYPES OF FIRE EXTINGUISHERS

## CARBON DIOXIDE (CO<sub>2</sub>)



A Trash Wood Paper



B Liquids Grease



C Electrical Equipment

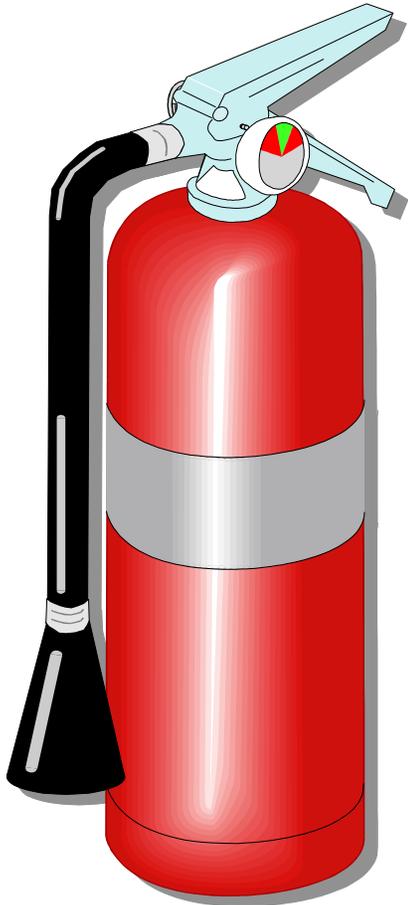


- Class “B” or “C” fires.
- 2.5-100 lb. of CO<sub>2</sub> gas at 150-200 psi (*8-30 seconds discharge time*).
- Has ***NO*** pressure gauge--capacity verified by weight.
- 3-8 ft. maximum effective range.
- Extinguishes by ***smothering*** burning materials. Displaces ***oxygen***.
- Effectiveness ***decreases*** as temperature of burning material increases.



# TYPES OF FIRE EXTINGUISHERS

## MULTIPURPOSE DRY CHEMICAL



A Trash Wood Paper



B Liquids Grease



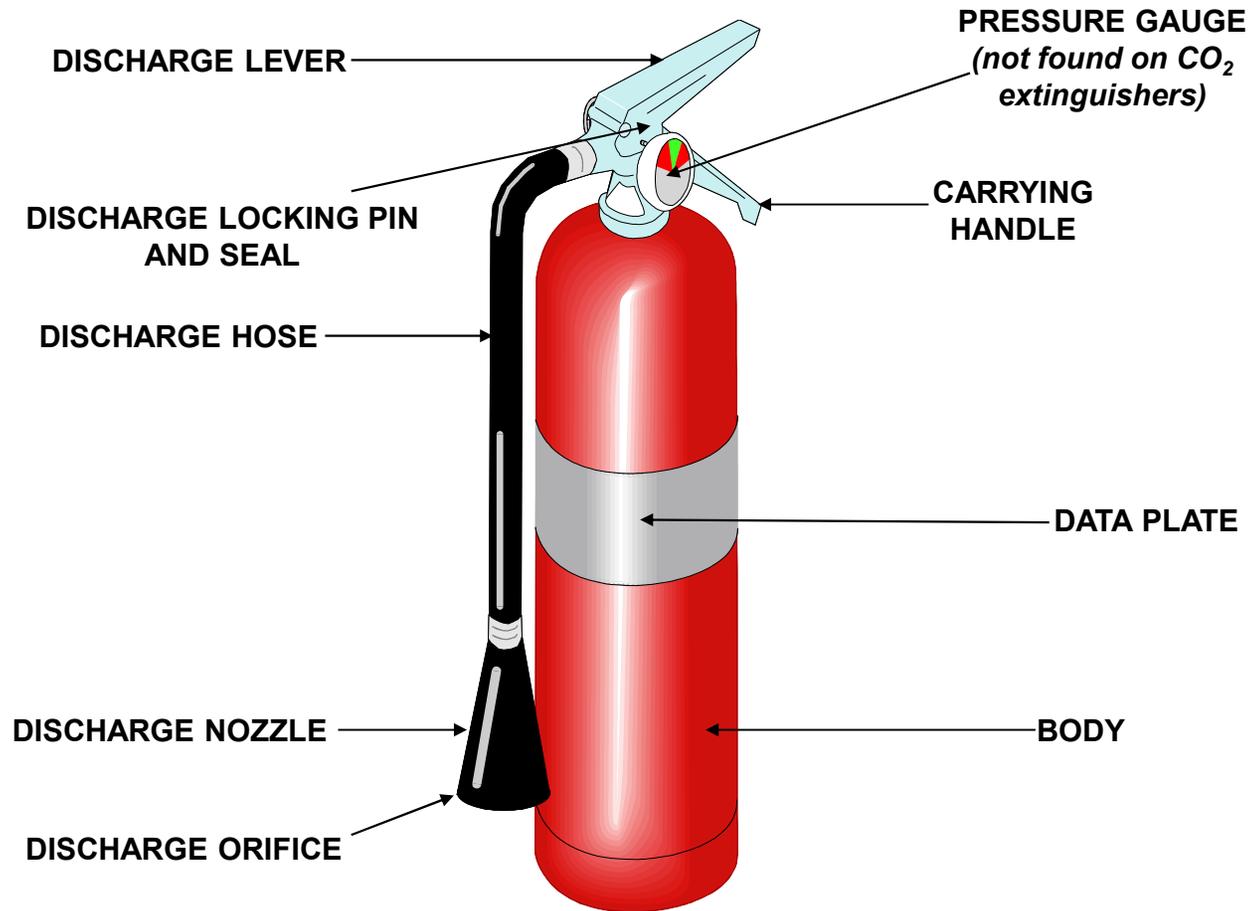
C Electrical Equipment



- Class “A”, “B”, or “C” fires. On campus mostly Class ABC.
- 2.5-20 lb. dry chemical (*ammonium phosphate*) pressurized to 50-200 psi by nitrogen gas (*8-25 seconds discharge time*).
- Has pressure gauge to allow visual capacity check.
- 5-20 ft. maximum effective range.
- Extinguishes by ***smothering*** burning materials. This separates the fuel from the oxygen in the air.



# FIRE EXTINGUISHER ANATOMY



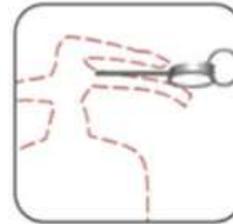


# HOW TO USE A FIRE EXTINGUISHER

Remember this easy acronym when using an extinguisher - **P.A.S.S.**

- ✓ **P**ull the pin.
- ✓ **A**im the nozzle.
- ✓ **S**queeze the handle.
- ✓ **S**weep side to side at the base of the fire.





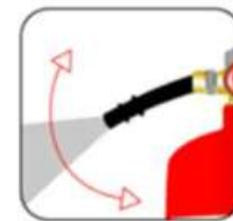
**P**ull  
the pin



**A**im  
at the  
base of  
the fire



**S**queeze  
the  
handles



**S**weep  
back  
and  
forth



Treat each alarm as if it is a true emergency and respond accordingly.



**R**

**RESCUE**  
or  
**REMOVE**  
people in  
immediate  
danger



**A**

**ALARM**  
  
Pull the  
nearest  
alarm &  
call 8222



**C**

**CONTAIN**  
  
Close all  
doors and  
windows



**E**

**EXTINGUISH**  
small fires or  
**EVACUATE**





## FACTS TO REMEMBER...

- Remain calm.
- Don't panic or cause confusion.
- NEVER shout fire.
- Proceed safely to nearest fire exit
- Feel surfaces of doors before opening
- Crawl to exit if smoke is present in area
- Follow instructions of Fire Department

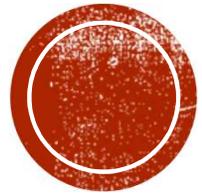




## OTHER WAYS YOU CAN HELP

- Keep passage ways and exits clear
- Ensure fire extinguishers and fire alarm pull stations are accessible at all times
- Place trash in proper receptacles
- Ensure that fire doors are not blocked open
- Know the location of at least two (2) emergency exits
- Know the location of fire alarm pull stations and fire extinguishers
- Take part in fire drills





# **FIRE AT READING HOSPITAL**

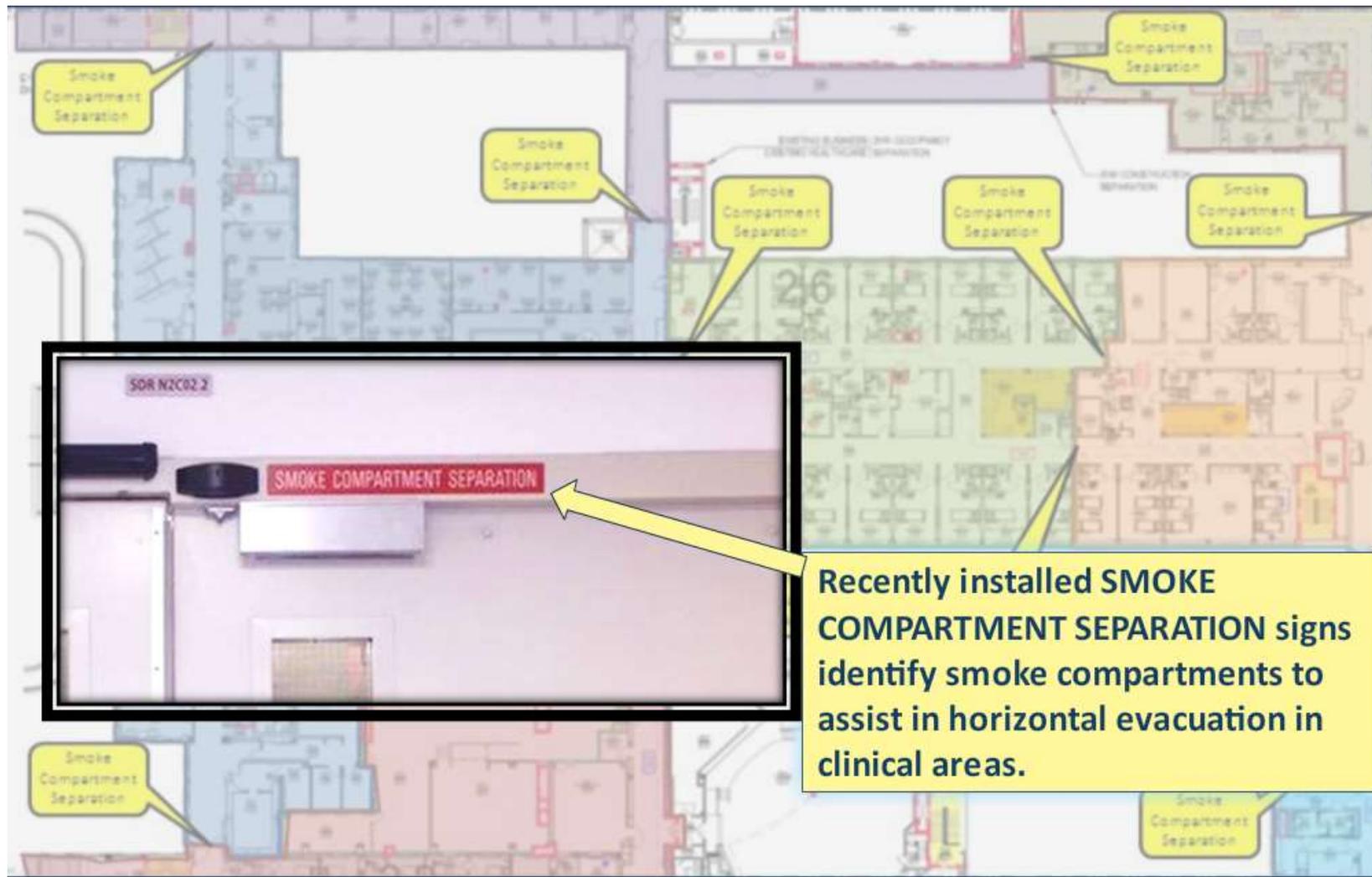


# REPORTING FIRES

The Hospital's fire alarm system is activated by a smoke detector, a heat detector, water flow from a sprinkler head, or a manual pull station.

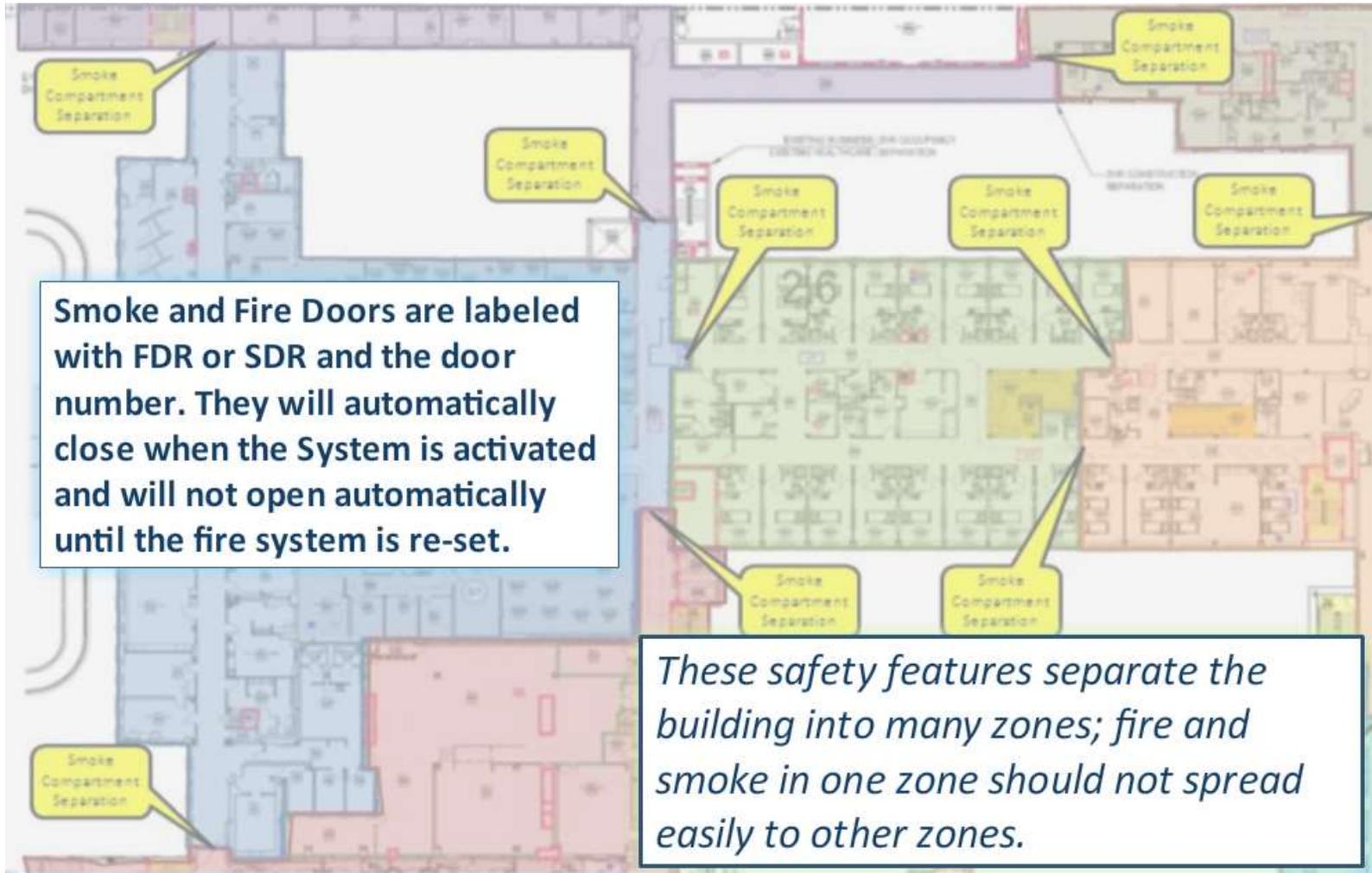
After any alarm activation, **call ext. 8222**, the Security Command Emergency Number. Give information on the location and type of fire.





Recently installed SMOKE COMPARTMENT SEPARATION signs identify smoke compartments to assist in horizontal evacuation in clinical areas.





**Smoke and Fire Doors are labeled with FDR or SDR and the door number. They will automatically close when the System is activated and will not open automatically until the fire system is re-set.**

*These safety features separate the building into many zones; fire and smoke in one zone should not spread easily to other zones.*



# STAFF RESPONSE TO FIRE ALARMS

## Defend-In-Place:

*The initial action does not involve evacuation of the location's occupants. Generally, this is implemented in clinical areas (buildings B, C, D, E, P, R, Spring Ridge, RHRH, T). Shelter in place, but be prepared if relocation is necessary to an alternate smoke compartment.*

**All locations designated as Defend-In-Place must respond to every fire alarm as though it was located in your building and floor. Follow all required procedures for In-Patient units.**

- Account for all patients.
- Assure patients and visitors that the "Fire Plan" is in operation.
- Close all room and corridor doors.
- Direct visitors in patient rooms to remain with patients.
- Clear volunteers and visitors from corridors. Direct to area of refuge; adjoining smoke compartment.
- Clear corridors of the following; Equipment and carts in use, Medical emergency equipment not in use, Patient lift and transport equipment, or other items that were temporarily in use.



# STAFF RESPONSE TO FIRE ALARMS

## Locations other than Defend-in-Place:

Staff and customers located in a building, occupancy, or floor designated as evacuate the floor or evacuate the entire building upon fire alarm activation.

- **Evacuate floor** = either exiting the floor location horizontal to an adjoining building or egressing down the nearest stairwell to the outside of the building.
- **Evacuate entire building** = locate the nearest stairwell and egress to the outside of the building



## HOW CAN I HELP?

*Fire doors must be able to close automatically in the event of a fire.*

Make sure that automatic fire doors are not blocked and that these doors are not propped or wedged open for any reason.

**NEVER block Manual Pull Stations, Fire Extinguishers, or Exit Doors.**





**ELECTRICAL**



# MACRO AND MICROSHOCK - *BOTH DEADLY*

- Macroshock
  - High-value current which passes arm to arm through the body (skin) contact with a voltage source.
  - Can be deadly
- Microshock
  - Low-value current which passes directly through the heart via a needle or catheter in an artery or vein.
  - Also known as “cardiac shock”
  - Very low current can be deadly



## **ELECTRICAL SAFETY**

**Most equipment in the healthcare setting is electric, which means there is risk of electric shock.**



**Electric shock happens when electricity flows through the body, and can cause burns, muscle spasms, ventricular fibrillation, respiratory arrest, or even death.**



# PREVENTING ACCIDENTS



## REMOVE AND REPORT HAZARDS

**Remove** electrical equipment from service if it:

- Malfunctions
- Shows signs of damage or signs of unusual heating
- Produces a burning smell during operation
- Shocks staff or patients

**Report** the hazard and **CALL 8888** to submit the equipment for repair.



## USE EQUIPMENT SAFELY

- Learn proper equipment operation before use
- Do not use damaged equipment or equipment on which liquid has been spilled
- Do not operate electrical equipment with wet hands or when standing in water
- Do not stack anything on or behind electrical equipment
- Turn equipment off before plugging in or unplugging

*All medical equipment should be inspected and tested on a regular schedule.*





### 3

## USE CORDS AND OUTLETS PROPERLY

- Do not use outlets or cords with exposed wiring; a hot outlet can be an indication of unsafe wiring
- Do not bend, stretch, or kink power cords excessively
- Do not jerk cords from outlets
- Do not staple, tack, or nail power cords to walls/floors or rest equipment on power cords
- Use only power cords with three-prong plugs

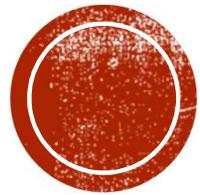


## PROTECT PATIENTS

- Place electrical equipment at a distance from patients
- Maintain patient areas, keeping floors dry at all times
- Do not touch patients and electrical equipment at the same time

4





# HAZARDOUS MATERIAL

**Chemical Hazard** – any solid, liquid, or gas that can harm people, other living organisms, property or the environment. A chemical hazard may be flammable, explosive, toxic, corrosive, an oxidizer, an asphyxiant, or a material that may have other characteristics that make it hazardous in specific circumstances.

# HAZARD COMMUNICATION

**Under its Hazard Communication Standard, OSHA requires all employers to develop written hazard communication programs.**

*Note: GHS is the Globally Harmonized System of Classification and Labeling of Chemicals adopted by the United Nations. OSHA's Hazard Communication Standard is aligned with the GHS.*



**To protect workers from exposure to hazardous chemicals, manufacturers, employers and employees all have hazard communication duties.**



## Manufacturers of hazardous chemicals must:

- Research, create, and distribute a Safety Data Sheet (SDS), which lists the specific hazards of the chemical
- Label, in English, all containers of hazardous materials with:
  - Product identifier
  - Signal word
  - Hazard statement(s)
  - Precautionary statement(s)
  - Pictogram(s)
  - Name, address, and telephone number of the manufacturer



## Employers whose employees work with hazardous chemicals must:

- Maintain a file of SDSs for all hazardous chemicals used by workers
- Inspect incoming chemicals to verify proper labeling – if a chemical is transferred to an unlabeled container at the facility, the new container must be labeled appropriately
- Train employees in the use of hazardous chemicals



## Employees who work with hazardous chemicals must:

- Know which hazardous chemicals are used in their work area
- Know where SDSs are located on their unit
- Know how to read an SDS
- Read all relevant SDSs before starting a job that may require the use of a hazardous chemical
- Read product labels carefully, follow all instructions, and heed all warnings
- Attend all required hazardous chemical training sessions





# HAZARD LABELS

Know how to read the hazard symbols, both old and new:



OLD

NEW

## GHS Pictograms



FLAMMABLE



CORROSIVE



EXPLOSIVE



COMPRESSED GAS



OXIDIZING



TOXIC



HEALTH HAZARD



HARMFUL/ IRRITANT



DANGEROUS FOR THE ENVIRONMENT



# SPILL CLEAN UP PROCEDURES

- **CALL 8222**

- Isolate the area. Close doors and evacuate the immediate area if necessary

**Remove ignition sources and unplug nearby electrical equipment.**

- Notify a staff member or your faculty

**Refer to MSDS (early)**

**Establish exhaust ventilation. Vent vapors to outside of building only (open windows and turn on fume hoods).**

**Locate spill kit and follow directions**

- Use Proper PPE

**Stop Source of Leak**

- Contain the Spill

- Use Absorbent to Soak up Spill

- Yellow bag Contaminated Materials

- Wash Your Hands



# CHEMOTHERAPY IS ONE OF THE CHEMICALS USED IN HEALTHCARE AND IS HAZARDOUS



- The Resource Conservation and Recovery Act (RCRA) regulations establish basic hazardous waste management standards for persons who produce hazardous waste, called hazardous waste generators
- It is a violation of the *Dangerous Waste Regulations* to dispose of these pharmaceuticals in the sewer, sharps container, or a regulated medical waste container.



# RADIOACTIVE MATERIAL

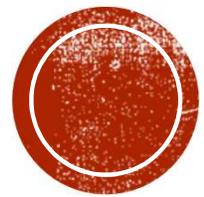


- In 2001, the department's Bureau of Radiation Protection and Bureau of Waste Management jointly developed regulations requiring all municipal and residual solid waste facilities to monitor all incoming wastes for the presence of radiation and radioactive materials.
- With increasing frequency, radioactive material is detected in municipal and residual solid waste by radiation monitors installed at processing and disposal facilities.

**Link of detail info for PA:**

<http://www.dep.state.pa.us/elibrary/GetDocument?docId=8126&DocName=FINAL%20GUIDANCE%20DOCUMENT%20ON%20RADIOACTIVITY%20MONITORING%20AT%20SOLID%20WASTE%20PROCESSING%20AND%20DISPOSAL%20FACILITIES.PDF%20>





# PLAIN LANGUAGE AT RH

You must be aware of the codes that will be called in order to know the expectation of staff/student response

**Reading Hospital**  
Plain Language – Codes Crosswalk

Situation	Current Language	Plain Language <i>Effective Dec. 16, 2019</i>
Summon Facility Leadership and Establish Incident Command		Incident Command Activation
Fire	Code Red	Code Red - Fire Alarm + Location
Fire Out	Code Green	All Clear - Resume Normal Duties
Code Team Activation - Cardiac Arrest Emergency	Code Blue	Code Blue - Location + ADULT (18 years+) Code Blue - Location + PEDS (17 and younger)
Medical Emergency - Non-Cardiac Arrest Emergency	ERT	Medical Emergency - ERT + Location
Deteriorating Patient Condition Stroke Team Activation	Medical Assessment Team	Rapid Response Team + Location Stroke + Location Brain Attack + Location
STEMI		Patient STEMI + Location
Trauma En-Route		Trauma + ETA Response Alert
Neonatal Crisis		Neonatal Emergency + Location
OB Emergency		OB Rapid Response Team + Location
Mass Casualty Incident		Mass Casualty Incident - Internal or External
Person Brandishing a Weapon	Code Silver	Security Emergency - Active Threat + Location Security Emergency - Active Shooter + Location
Out of Control Person	Code Orange	Security Emergency - Behavioral Response + Location
BERRT		Security Emergency - Behavioral Response + Location
Facility Lockdown	Code Grey	Security Emergency - Campus Lockdown
Emergency Department Lockdown	Code Grey	Security Emergency - Campus Lockdown
Suspicious Package		Security Alert - Suspicious Package
Bomb Threat	Code Black	Security Alert - Bomb Threat
Patient Elopement	Code Purple	Security Alert - Elopement + Location + Description
Infant Abduction	Code Pink	Security Alert - Infant Abduction + Location + Description
Pediatric Patient Abduction	Code Pink	Security Alert - Pediatric Abduction + Location + Description

Missing Child - Non-Patient	Code Adam	Security Alert - Missing Child + Location
Loss of Utility - Power	Code Brown	Utility Alert - Type (Power, Water, Phone, Gas, HVAC)
Loss of Utility - Water, Gas, Phone, HVAC		Utility Alert - Type (Power, Water, Phone, Gas, HVAC)
Tornado, Thunderstorm, or Winter Weather		Severe Weather Alert - Type
Disaster	Code D	Internal Event + Location External Event All Clear
Decontamination Alert		Patient Decontamination + Location
Internal Spill		Hazmat Chemical Spill + Location
Internal Evacuation		Evacuation + Location
Facility Evacuation		Evacuation - Facility
Exercise Notification		Internal Drill
Exercise Notification		External Drill
Exercise Complete Notification		All Clear – Resume Normal Duties

\*Bolted messages are to be announced overhead  
\*“All Clear” is to be used after Emergencies or Alerts



What does a Code Red mean?



What does a Code Purple mean?



What does a Code Orange mean?



What does a Code Blue mean?

**LET'S TEST YOUR  
KNOWLEDGE ON  
PLAIN  
LANGUAGE....**





# **RADIATION AND MRI**



The three key factors for limiting exposure are:

- **Time.** Minimize the amount of time that you are exposed.
- **Distance.** Maximize your distance from the radiation source.
- **Shielding.** Use appropriate shielding to absorb the energy of radioactive particles.

**Known as the Cardinal Rule**

**↓ TIME + ↑ DISTANCE + USE SHIELD =  
LESS EXPOSURE**



Because of the extremely strong magnet used, MRI (Magnetic Resonance Imaging) hazards are related to items that enter the system:

Ferromagnetic objects can become “projectiles” in the MRI field

- Both patients and staff must remove ALL metal objects, prior to entering the MRI field.
- Coins, keys, cell phones and even IV poles and floor cleaning equipment are attracted to the strong magnet.



Magnet of the MRI equipment is always turned ON



## Special Safety Precaution

- For safety reasons, at RHS we do not take ANY oxygen cylinders into the MRI field, even those that are marked “MRI Safe” or “MRI Only”.

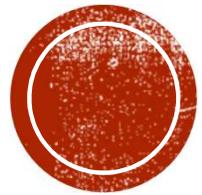
## Electronic devices that enter the magnetic field can malfunction due to interference

- Patients are thoroughly screened prior to MRI, to ensure that they do not have MRI-unsafe implants or embedded objects.

## Metal implants or wires can conduct electrical currents, resulting in burns

- Patients are properly positioned for MRI so that electrically conductive loops are not formed; this will prevent burns.





# PERSONAL BELONGINGS

Each facility will have their own policy

At RH, security takes care of trauma patients and ED patients

In Radiology, there are signs stating to bring valuables with the patient to the room



# HANDWASHING



# So Why All the Fuss About Hand Hygiene?

***Most common mode of transmission of pathogens is via hands!***

Hand hygiene is a general term that applies to either handwashing, antiseptic handwash, alcohol-based handrub, or surgical hand hygiene/antiseptis





**GOAL: Reduce the Risk  
of Healthcare-  
Associated Infections**



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**Comply with Centers for Disease Control (CDC) guidelines for hand hygiene.**

Perform hand hygiene *before and after* patient contact



Alcohol sanitizer is preferred



Use soap and water when hands are visibly soiled

Use soap and water with environmental precautions

# SPECIFIC INDICATIONS FOR HAND HYGIENE

- Handwashing
  - Before, during, and after preparing food
  - Before eating food
  - Before and after caring for someone who is sick
  - Before and after treating a cut or wound
  - After using the toilet
  - After changing diapers or cleaning up a child who has used the toilet
  - After blowing your nose, coughing, or sneezing
  - After touching an animal, animal feed, or animal waste
  - After touching garbage





[HTTPS://YOUTUBE/EZW4GA3JG3E](https://youtu.be/EZW4GA3JG3E)



Click link to watch the  
CDC Handwashing  
video or copy and  
paste link into web  
browser

## **ALCOHOL-BASED HAND SANITIZER**

- If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol.
- Alcohol-based hand sanitizers can quickly reduce the number of germs on hands in some situations, but sanitizers do not eliminate all types of germs

<http://www.cdc.gov/features/handwashing/>



## Alcohol-Based Hand Sanitizer

Use an alcohol-based hand sanitizer that contains at least 60% alcohol. Supervise young children when they use hand sanitizer to prevent swallowing alcohol, especially in schools and childcare facilities.

- **Apply.** Put enough product on hands to cover all surfaces.
- **Rub** hands together, until hands feel dry. This should take around 20 seconds.

**Note:** Do not rinse or wipe off the hand sanitizer before it's dry; it may not work as well against germs.





# READING HOSPITAL HANDWASHING POLICY

Log onto Edvance under MI 116  
Resources to view full policy:

<https://readingsohs.edvance360.com/>

# READING HOSPITAL NAIL POLICY

- 1. Artificial nails and ALL nail enhancements will not be permitted while on duty for any staff involved in direct patient care in accordance with The Centers for Disease Control and Prevention Guidelines for Hand Hygiene in Health Care Settings.
- 2. Nails should be less than  $\frac{1}{4}$  inch long.

Log onto Edvance under MI 116  
Resources to view full policy:

<https://readingsohs.edvance360.com/>

