Safe Handling of Hazardous Materials and Environmental Safety

2017 JHS Annual Mandatory Education
Objectives

- Understand the requirements of applicable JHS Administrative policies related to hazardous materials and waste
- Be able to describe and identify risks associated with hazardous materials
- Be able to identify risks within the environment
- Be able to respond appropriately to indoor air quality (IAQ) concerns
- Be aware of magnetic resonance imaging (MRI) safety
- Be able to explain general spill response procedures
Hazardous Materials/Toxic Substances Communication

• The main objectives of JHS Administrative Policies #’s 229 & 263 are to ensure employees are educated and trained on the hazardous products that exist in their respective work areas, along with precautionary measures and emergency response procedures.

• For those departments with employees that handle hazardous drugs, as defined by JHS Administrative Policy #400.034, separate and distinct training modules are required/available for addressing special procedures before an individual prepares, administers, disposes, or manages spills of those agents.
As a PHT/JHS Employee You Have a Right to Know

- What hazardous products and chemicals you work with
- The nature and effects of exposure to hazardous substances in the work place
- How to protect yourself from hazards
- The appropriate personal protective equipment (PPE) to wear
- How to appropriately use PPE
- The limitations of the PPE
- How to respond to a spill or exposure
Physical Hazards You May Face

- Flammable liquids or solids
- Combustible liquids
- Compressed gases
  - As a projectile
  - As a fire hazard
- Explosive materials
- Highly reactive or unstable materials
- Water reactive materials
- Toxic/Hazardous drugs (chemotherapy, etc.)
Health Hazards You May Face

• Acute Health Effects
  – Acute health effects are short-term
  – Symptoms appear just after exposure and may include:
    • Rashes
    • Burns
    • Respiratory irritation
    • Eye irritation
    • Nausea
    • Dizziness
    • Shortness of breath
  – Acute health effects are usually caused by exposure to a high concentration of a material
  – Agents which are considered to be corrosives or irritants are two types of agents, but are not the only types which can cause acute health effects
Health Hazards You May Face

• Chronic Health Effects
  – Chronic health effects are long-term
  – Symptoms appear long after exposure and are usually a result of long-term exposure to an agent at a low concentration
  – Neurotoxins and carcinogens are two types of agents, but not the only types which can cause chronic health effects
  – Chronic health effects may include:
    • Cancer
    • Lung or Liver damage
    • Allergies
  – Mechanical injury
Ways Hazardous Agents Enter the Body

- **Inhalation**
  - breathed through mouth or nose
- **Absorption**
  - touches skin or is injected
- **Ingested**
  - swallowed, gum-chewing
- **Ocular entry**
  - through eyes
Flush your eyes following a splash

• Following a chemical or biological splash to the eyes, it is very important to flush the materials out of your eyes.
• This is accomplished by using emergency flushing equipment.
• There are two types of eye flushing equipment currently in use at JHS:
  – Plumbed Emergency Eyewash Units
  – Personal Eyewash Bottles
Plumbed Emergency Eyewash Units

• Intended to be used following a corrosive splash to the eyes
• Intended to provide at least 15 minutes of continuous flushing
• Each unit must be visually inspected and fully activated for at least 3 minutes once per week (for additional information see JHS Administrative Policy #265):
  – To verify proper operation
  – To ensure there is no blockage
  – To keep the plumbing lines flushed out
  – To ensure water temperature is tepid and/or safe
• The plumbed eyewash units must be inspected and maintained annually by Engineering Services/ Maintenance/ Plant Operations (or contracted vendor)
Plumbed Emergency Eyewash Units
Personal Eyewash Bottle

- Intended to be used following a blood and/or body fluid splash to the eyes (based on the Bloodborne Pathogen Exposure Control Plan)
- May also be used initially for immediate flushing of the eyes until a Plumbed Emergency Eyewash Unit can be reached
- Have an expiration date, so they must be checked routinely and replaced if expired
Personal Eyewash Bottles
Hazard Communication

• Globally Harmonized System for Labeling Chemicals (GHS)
  – Adopted by OSHA in 2012 as part of the revised Hazardous Communication Standard
  – GHS is an international approach to hazard communication, providing agreed criteria for classification of chemical hazards, and a standardized approach to label elements and safety data sheets
Hazard Communication - LABELS

- Labeling practices
  - Must be in English, contain signal words, pictograms, and hazard and precautionary statements associated with the product or product constituents, and the contents of the product
  - Provide the identity of a hazardous product and appropriate warnings
  - Should be reviewed prior to use
  - Should never be removed

- You MUST ALWAYS consider unlabeled products/containers as dangerous
Hazard Communication - LABELS

1. Product Identifier
2. Signal Word
   - Danger = High
   - Warning = Low
3. Applicable Pictogram(s)
4. Hazard Statement
5. Precautionary Statement
6. Contact Info for Responsible Party

**Note** Label sections are not sequence specific
Signal Words

- **Signal Word** means a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The signal words used in this section are “Danger” and “Warning”.
  - **DANGER** is used for the more severe hazards
  - **WARNING** is used for the less severe hazards
Pictograms

- **Pictograms** are intended to graphically convey specific information about the hazards of a chemical.
- There are nine (9) pictograms designated for application to a hazard category.
- The pictograms are symbols in black, with a white background, framed by a red diamond (the specific pictograms and explanations follow).
Pictograms

- Pictograms have been created for the following nine (9) categories:
  - Health Hazard
  - Flame
  - Exclamation Mark
  - Gas Cylinder
  - Corrosion
  - Exploding Bomb
  - Flame Over Circle
  - Environment (this is a non-mandatory pictogram)
  - Skull and Crossbones
Pictograms & Associated Hazards

- Carcinogen
- Mutagenicity
- Reproductive Toxicity
- Respiratory Sensitizer
- Target Organ Toxicity
- Aspiration Toxicity
Pictograms & Associated Hazards

- Flammables
- Pyrophorics
- Self-Heating
- Emits Flammable Gas
- Self-Reactives
- Organic Peroxides
Pictograms & Associated Hazards

- Irritant (skin and eye)
- Skin Sensitizer
- Acute Toxicity (harmful)
- Narcotic Effects
- Respiratory Tract Irritant
- Hazardous to Ozone Layer (non-mandatory)
Pictograms & Associated Hazards

- Gases Under Pressure
Pictograms & Associated Hazards

- Skin Corrosion / Burns
- Eye Damage
- Corrosive to Metals
Pictograms & Associated Hazards

- Explosives
- Self-Reactives
- Organic Peroxides
Pictograms & Associated Hazards

- Oxidizers
Pictograms & Associated Hazards

- Aquatic Toxicity
Pictograms & Associated Hazards

- Acute Toxicity (fatal or toxic)
Hazard and Precautionary Statements

- **Hazard Statement** is a statement assigned to a hazard class and category that **describes the nature of the hazard(s) of a chemical**, including, where appropriate, the degree of hazard.

- **Precautionary Statement** is a phrase that describes **recommended measures that should be taken to minimize or prevent adverse effects** resulting from exposure to a hazardous chemical, or improper storage or handling.
Hazard Communication

• A Hazardous Products/Chemicals Inventory List **must** be maintained on each unit/department
• A Safety Data Sheet (SDS) **must** be made available for every product comprised of hazardous chemicals
• Department-specific training **must** be provided to all staff members (as soon as they are hired and/or upon reassignment) to address safe handling, appropriate storage and disposal, PPE, and emergency spills response, according to each SDS
• Department-specific training **must** be specific to the chemicals/hazards present within that department/unit, and should be received annually.
# Hazard Communication – Hazard Categories Comparison (NFPA vs. GHS)

<table>
<thead>
<tr>
<th><strong>NFPA Hazard Ratings</strong></th>
<th><strong>GHS Hazard Categories</strong></th>
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</thead>
<tbody>
<tr>
<td>0 – Minimal Hazard</td>
<td>Cat. 1 – Severe Hazard</td>
</tr>
<tr>
<td>1 – Slight Hazard</td>
<td>Cat. 2 – Serious Hazard</td>
</tr>
<tr>
<td>2 – Moderate Hazard</td>
<td>Cat. 3 – Moderate Hazard</td>
</tr>
<tr>
<td>3 – Serious Hazard</td>
<td>Cat. 4 – Slight Hazard</td>
</tr>
<tr>
<td>4 – Severe Hazard</td>
<td>Cat. 5 – Minimal Hazard</td>
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</tbody>
</table>

**Note:** The greater the number, the more serious the hazard.

**Note:** The lower the number, the more serious the hazard.
Hazard Communication – Hazard Categories

• Utilizing the GHS Hazard Categories, for example, a Category 1 flammable product is EXTREMELY flammable (flashpoint less than 74°F), while a Category 4 flammable product is not so flammable (flashpoint greater than 140°F)

• Contrast this with the NFPA Hazard Categories where a Category 4 flammable product is EXTREMELY flammable, while a Category 0 flammable product is not flammable/combustible at all
Information Sections Provided on SDS

- Chemical name
- Physical Characteristics
- Hazardous Ingredients
- Fire & Explosion Data
- Health Hazard Information
- Personal Protective Equipment (PPE)
- Emergency Response Information
- Handling, Spill, & Disposal Procedures
Information Sections Provided on SDS

I. Identification
II. Hazard(s) identification
III. Composition/information on ingredients
IV. First-aid measures
V. Fire-fighting measures
VI. Accidental release measures
VII. Handling and storage
VIII. Exposure controls/personal protection
IX. Physical and chemical properties
X. Stability and reactivity
XI. Toxicological information
XII. Ecological information (non-mandatory)
XIII. Disposal considerations (non-mandatory)
XIV. Transport information (non-mandatory)
XV. Regulatory information (non-mandatory)
XVI. Other information, including date of preparation or last revision (non-mandatory)
How to Obtain an MSDS/SDS using the JHS Intranet Portal

1. Go to the JHS Jet Portal
2. Click on the Employee Resources Tab (near the top center of the page)
3. Scroll down to find the “Safety Data Sheet (SDS) Website” Link
4. Click on “Safety Data Sheet (SDS) Website”
5. Select the option to search by: Product Name, Manufacturer Name, or Manufacturer Part #
6. Type in the desired product name, manufacturer name, or part #
7. Click on Search
8. Click on the icon next to the desired SDS
9. Click on View
10. The SDS will be brought up as a PDF in Adobe Acrobat Reader.
11. Enlarge to view and/or print the SDS

Call 1-800-451-8346 if a SDS is not available via the site and for Fax-on-Demand service
Appropriate PPE May Include:

- Specific Requirements can be found on labels or SDS
  - Respirators, dust masks
  - Goggles, face shields, glasses
  - Gloves
  - Head and foot protection
  - Aprons or full body suits
  - Proper footwear
General Work Practice **DOs**

- **DO** work with hazardous products or chemicals only as directed
- **DO** ensure adequate ventilation prior to using hazardous chemicals
- **DO** consult an SDS before using a product
- **DO** wash hands and face thoroughly with soap and water after use
- **DO** use personal eyewash bottles, plumbed emergency eyewash or drench shower units, where available, if splashed
- **DO** take the SDS to Occupational Health Clinic or ECC in the event of an exposure
General Work Practice **DO NOTs**

- **Do NOT** smell, inhale, or taste hazardous products or chemicals
- **Do NOT** allow hazardous products or chemicals to get on your hands, face, clothing, or shoes
- **Do NOT** eat, drink, chew gum, or apply cosmetics when working with hazardous products or in areas where hazardous products or chemicals are used and/or stored
- **Do NOT** smoke when working with hazardous products
Hazard Recognition

• Be familiar with emergencies that could occur by reviewing labels and SDS beforehand

• Look for information about:
  – Flammability
  – Incompatibility (adverse chemical reaction)
  – Stability
  – Shock sensitivity
  – Proper PPE

• Do not use products together or one after the other unless the instructions for use specifically identify that this is an appropriate use of the product (e.g. using PDI Super Sani-Cloth and then using a PDI Bleach Wipe will create a toxic gas)
In Case of a Spill

- The following slides provide information for general hazardous product/chemical spill management
- JHS Administrative Policy #263 provides the general framework for responding to a hazardous material spill
- Employees will receive department-specific spill management training about the hazardous products or chemicals used in that department/unit
- Training for managing spills of hazardous drugs, as defined by JHS Administrative Policy #400.034, is provided/available for those areas where hazardous drugs are commonly used
- Spill response training is required before an individual can effectively manage spills of hazardous agents
ACT QUICKLY

• Obtain the appropriate spill kit and all appropriate personal protective equipment to clean up manageable spills
• Wear all appropriate personal protective equipment (PPE)
• Inform supervisor of spill and potential exposure
• Report large spills and leave cleanup to trained personnel
• For larger and/or uncontrollable spills, contain the spill as much as possible to prevent it from spreading
In Case of a Spill

• Approved absorbents, neutralizing chemicals, and special containers may be needed to clean up a spill or leak
• Remove potential sources of ignition
• Immediately isolate the area
• Keep away unnecessary traffic until given the “All Clear”
• The “All Clear” is provided by either Fire Dep./Haz Mat Team, contracted clean-up professional, and/or Environmental Health & Safety personnel
In Case of an Uncontrollable Spill

- NOTIFY PROPER PERSONNEL
  - An uncontrollable spill is a spill which cannot be managed with the resources immediately available to the department/unit
  - In the event of an uncontrollable spill, call the appropriate emergency phone number and report a **Code Orange** to ensure the proper people or departments are notified/contacted
  - Keep emergency phone numbers handy (or refer to badge buddies and bulletins where available)
If Exposure Occurs

- If you are exposed through:
  - Inhalation – move to fresh air (seek medical attention if person is not breathing or breathing is difficult)
  - Skin – wash with soap and water (use a drench shower where available)
  - Swallowed – seek immediate medical attention
  - Eyes – flush with water for 15 minutes using an emergency eyewash unit

- If you experience any type of symptomatology which may be contributed to exposure to a hazardous agent, you should:
  - Report immediately to your supervisor and then to your respective Occupational Health Clinic (report to the ECC if the Occupational Health Clinic is closed)
  - Obtain a copy of the appropriate SDS and take it with you to the Occupational Health Clinic (or ECC) for treatment
  - For appointments with the Occupational Health Clinic, call (786) 466-8381

- Always identify the hazardous agent and refer to labels and/or SDS for specifics
Compressed Gas Cylinder Safety (JHS Administrative Policy #234)

- Always ensure that the tank is secured in a rack, or, if in a transport cart, that the securing thumbscrew is in place and tightened down to prevent the tank from tipping or falling over
- Cylinder must never be left on a bed or stretcher, or left freestanding
- Segregate FULL cylinders in a labeled rack
- DO NOT comingle FULL cylinders with any other cylinders
- 300 cubic feet of Oxygen may be stored per smoke compartment with no special precautions as long as they are not blocking the path of exit
- More than 300 cubic feet but less than 3000 cubic feet of oxygen must be stored in a designated room designed for the use
- More than 3000 cubic feet of oxygen is required to be stored in a designated room, and meet ventilation and electrical requirements
- Contact the JHS Environmental Health & Safety Department at 305-585-2903 for any compressed gas storage questions
Compressed Gas Cylinder Safety

Tighten the thumbscrew to secure the tank!

Contact Respiratory Therapy to obtain a thumbscrew if a wheeled transport cart does not have one.
Indoor Air Quality (IAQ)

• Exposure to indoor air contaminants such as chemicals, molds, and indoor tobacco smoke is a potential environmental health risk
• Contact the JHS Environmental Health & Safety Department to report unsafe conditions or practices, air quality concerns, or request best practice information
  – **Phone**: 305-585-2903
  – **Email**: JHS-Environmental-HealthSafety-Dept@jhsMIAMI.org
• An assessment will be conducted and recommendations made to appropriate departments where necessary
• JHS strives to ensure all buildings are maintained clean and comfortable
General Magnetic Resonance Imaging (MRI) Safety

• The MRI environment presents new safety concerns that you might not be familiar with.
• One must be constantly aware of their surroundings and all activities that take place in the department.
• Awareness is not only vital to patient safety, but also for the safety of fellow staff members who may not be fully trained in MRI safety.
• The most significant risk factor in an MRI system is the magnet.
• Because of the power of these magnets the MRI suite can be a very dangerous place if strict precautions are not observed.
• Metal objects can become dangerous projectiles if they are taken into the scan room (paperclips, pens, keys, scissors, hemostats, stethoscopes, etc.) and can be pulled out of pockets and off the body at which point they can fly toward the opening of the magnet at very high speeds posing a threat to everyone in the room.
General MRI Safety

- Even when the control panel is dark and the scanner appears to be off, the magnet is still energized – only through a special process is the magnet powered down
- Access into the MRI area is controlled
- The MRI environment is divided into 4 distinct zones with each zone being a higher risk environment than the previous one
General MRI Safety

• **Zone I:** Area/hallways around the MRI suite (e.g. the area/hallways outside of DTC 104)
  – No special screening and or training is required in this area
• **Zone II:** MRI waiting area/ receptionist area
  – All outpatient screening is done in this area prior to the actual scan
• **Zone III:** MRI holding Area
  – This area is considered any area beyond the restricted entrance points
  – This includes the holding area interior patient holding room and bathroom
  – It is the most dangerous area and most difficult to control, therefore, only properly screened and trained staff members and key personnel may enter this area
• **Zone IV:** Magnet Suite
  – Only MRI staff have access to this area
  – No personnel under any circumstances shall enter this area unless they are instructed by a trained MRI staff
  – Granting access to this area requires screening and supervision by a trained MRI staff