HAZARD COMMUNICATION

HAZCOM: RIGHT TO KNOW, DO YOU?
THERE ARE 3 STYLES OF HAZCOM IN USE

Hazcom of the past:

HMIS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HEALTH</td>
<td>0</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
<td>0</td>
</tr>
<tr>
<td>PHYSICAL HAZARD</td>
<td>0</td>
</tr>
<tr>
<td>PERSONAL PROTECTION</td>
<td>0</td>
</tr>
</tbody>
</table>

NFPA

```
   2
  3   1
  W
```
HMIS

- Measured 1-4
- Lists PPE required
- Lists Chemical name
- Usually spot for notes
NFPA

- Measured 0-3
- White is for special notes
- Not all chemicals are unique
- A 3 = Dangerous

Hydrochloric Acid

Sodium Hydroxide

Ammonium Nitrate
# Globally Harmonized System

## GHS Pictograms

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Hazard</strong></td>
<td>Carcinogens, respiratory sensitizers, reproductive toxicity, target organ toxicity, germ cell mutagens</td>
</tr>
<tr>
<td><strong>Flame</strong></td>
<td>Flammable gases, liquids, &amp; solids; self-reactives; pyrophorics;</td>
</tr>
<tr>
<td><strong>Exclamation Mark</strong></td>
<td>Irritant, dermal sensitiser, acute toxicity (harmful)</td>
</tr>
<tr>
<td><strong>Gas Cylinder</strong></td>
<td>Compressed gases; liquefied gases; dissolved gases</td>
</tr>
<tr>
<td><strong>Corrosion</strong></td>
<td>Skin corrosion; serious eye damage</td>
</tr>
<tr>
<td><strong>Exploding Bomb</strong></td>
<td>Explosives, self-reactives, organic peroxides</td>
</tr>
<tr>
<td><strong>Flame Over Circle</strong></td>
<td>Oxidisers gases, liquids and solids</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Aquatic toxicity</td>
</tr>
<tr>
<td><strong>Skull &amp; Crossbones</strong></td>
<td>Acute toxicity (severe)</td>
</tr>
</tbody>
</table>
TOXICOLOGY
IT’S THE LITTLE THINGS THAT KILL YOU
OBJECTIVES:

- Understand routes of entry
- Understand dosages
- Recognize chronic toxicological responses
ROUTES OF ENTRY

• Inhalation

• Ingestion

Injection

Absorption
Skin absorption rate
DOSAGE

Who will be more effected from a dose?

Why?
DOSAGE

• Particulates:
  Lead
  Silica
  Asbestos

• Soluables:
  Gases (H$_2$S)
  Liquids (HCl)

$\mu g/m^3$  ppm
HOW MUCH IS A PART PER MILLION?

- 1 PPM = 1 drop of chocolate in 14 gallons of milk
- 1 PPM = 1 shot glass in a tank car
- 1 PPM = 1 hour in 115 years
- 1 PPM = 1 yard in 10,000 football fields
- 1 PPM = 1 penny in $10,000
HOW MUCH IS A $\mu$g/m$^3$?

- The Permissible Exposure Limit (PEL) for Silica is 50 $\mu$g/m$^3$.
- This room is 49ft x 50ft x 12ft so it is 29,400ft$^3$.
- 29,400 ft$^3$ = 830 m$^3$.
- 830 m$^3$ x (PEL) 50 $\mu$g/m$^3$ = 41,500$\mu$g.
- 41,500$\mu$g = .0415 grams.
CHRONIC EFFECTS OF TOXINS

• **Mutagens:** Changes DNA

• **Carcinogens:** Causes Cancer

• **Teratogens:** Attacks the reproductive cells and creates genetic defects in your progeny
CONCLUSION

• Everybody is susceptible to different doses, be mindful if you feel symptoms before PEL/STEL
• Particulates are measured in µg/m³
• Soluble are measured in PPM
• The 3 major chronic results of over exposure
QUESTIONS?