

# PROTECTING THE PROTECTORS: ENVIRONMENTAL HEALTH AND SAFETY FOR THE DISASTER RESPONDER

*(OR DEVELOPING A HEALTH AND SAFETY SYSTEM FOR  
DEPLOYED PERSONNEL PROTECTION AT A DISASTER  
RESPONSE)*

Note: The purpose of this session is not to cover basic SOFR practices (participants should already have baseline knowledge), but to put that knowledge into a system with the greatest effect.

*Presented by:*

Joseph A. Cocciardi, PhD, MS, CSP, CIH, REHS, RS  
jcocciardi@cocciardi.com

Cocciardi and Associates, Inc.

# Before We Get Started:

Section 1: Introductions to Disaster Response.

---

Section 2: Assessing Hazards and Risks.

---

Section 3: Planning for a Safe Response.

---

# Before We Get Started:

- ▣ Emergency Procedures.
- ▣ Courtesy Procedures:
  - Restrooms.
  - Snacks.
  - Cell Phones/Videos!
  - Questions?



## Section 1: Introductions to Disaster Response:

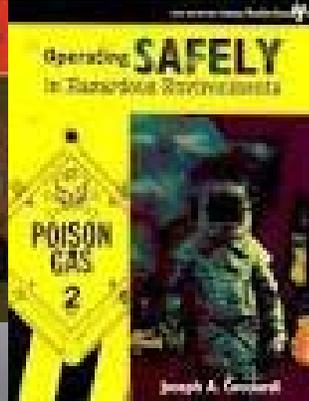
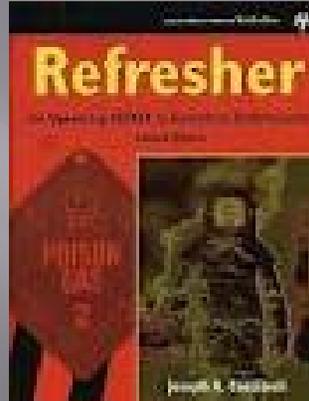
---

- VIDEO #1: FIRE BASED EMS  
[<http://www.youtube.com/watch?v=ruokZeIV6b0g>].

# Introductions

- ▣ Who/What You Are!
- ▣ Experience at “Protecting the Protector”.
- ▣ Expectations/Take Away's!
  - Class Take Away's – Specific Changes: Now!
  - Knowledge Take Away's – Future Learning's!

# Introductions



National Fire Protection Association



**COCCIARDI**  
and Associates, Inc.

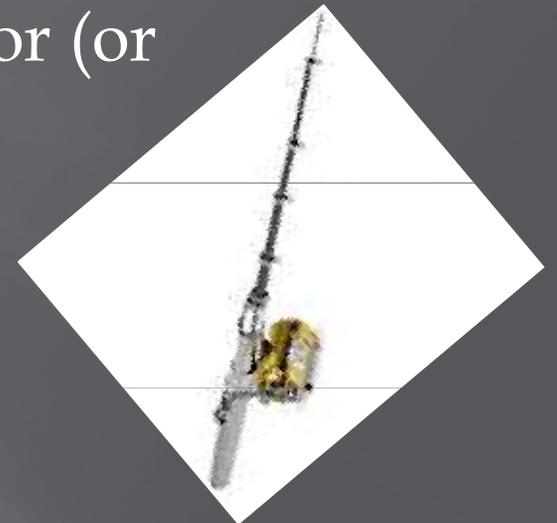
Safety • Environmental Health • Emergency Preparedness  
Consulting and Training



JOE'S EXPECTATION: LF/HC → HF/HC (Class Homework).

# Introductions

- ▣ Who/What You Are?
- ▣ Experience at “Protecting the Protector (or Concerns!)”.
- ▣ Class Expectation:
  - Class “Take Away’s”.
- ▣ Knowledge Expectation:
  - Knowledge “Take Away’s”.
- ▣ Homework (Make a Change to Move High Consequence/Low Frequency Events to High Consequence/High Frequency Event).



# Introductions



**High Frequency (HF)/  
Low Consequence (LC)**

**High Frequency (HF)/  
High Consequence (HC)**



**Low Frequency (LF)/  
Low Consequence (LC)**

**Low Frequency (LF)/  
High Consequence (HC)**



JOE'S EXPECTATION: Move 1 item from today's discussion from LF/HC to HF/HC in your service.

# EHS for the Disaster Responder

- VIDEO #2: HHS EMERGENCY RESPONSE: HAITI VIDEO  
[<http://www.hhs.gov/haiti/video/index.html>].

SIMILARITIES!

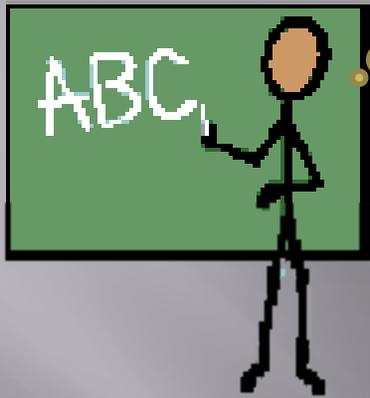
<b>Typical Response</b>	<b>Disaster Response</b>
-----------------------------	------------------------------

DIFFERENCES!

(Exercise #1: Compare/Contrast Safety and Health Concerns for the Described Typical and Atypical (Disaster) Responses).

# EHS for the Disaster Responder

Risk  
Assessment



- Lets “talk about the differences and how we will potentially affect them”.

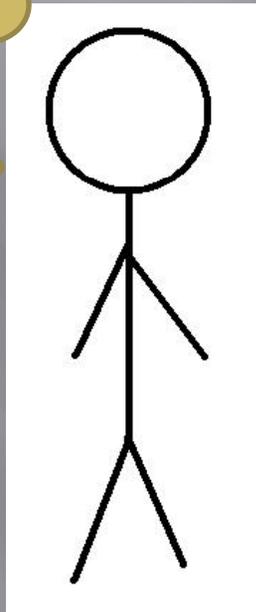
(Exercise #1: Results (How Do We Address the Atypical Concerns?).

# Section #2: Assessing Hazards and Risks

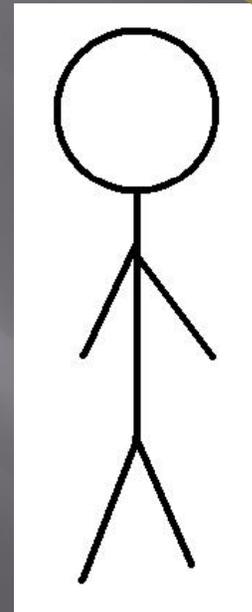
- ▣ Hazard Assessment and Risk Matrix (HARM)
  - ▣ The Hazard Evaluation and Risk Assessment (HERA).

# Preventative Medicine

CHIEF  
SAFETY  
OFFICER



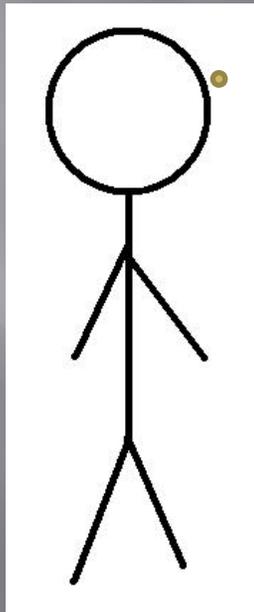
CHIEF  
MEDICAL  
OFFICER



- ▣ OSHA – Competent Person 1) has the knowledge to address hazards, and the 2) authority to implement actions.

# Pre-Event: Hazard Assessment (HARM):

“WHAT’S THE HARM”?



- “The HARM is developed by your CMO with the assistance of the Chief Safety Officer.” It identifies potential hazards in an anticipated response.

Response: “Hurricane Irene” (Handout #1: HARM)

(Exercise #2A: Assess and list the hazards for the exemplary response).

(Exercise #2B: Discuss the applicability of the HEAT HARM to the exemplary response).

# Pre-Event: Risk Assessment

“The HERA is developed by your CMO and Chief Safety Officer”. It identifies actions taken PRIOR to the response, for those at risk.

## HERA:

- ▣ Mission – Location.
- ▣ Point of Contact.
- ▣ Effective Date/Expiration Date.
- ▣ Scope and Applicability.



# HERA: General Information

- ▣ Weather (High/Low/Humidity).
- ▣ Worksites (CONUS/OCONUS).
- ▣ Quarters.
- ▣ Meals.
- ▣ Security.

# HERA: Anticipated/Plausible Hazards

- ❑ Biological – Bloodborne Exposures/Oral-Fecal Exposures.
- ❑ Respiratory Hazards: Chemical, Biological and Radiological Hazards.
- ❑ Vector-borne Hazards.
- ❑ Hazardous Fauna.
- ❑ Hazardous Flora.



# HERA: Environmental Hazards

- ▣ Severe Weather.
- ▣ Transportation (EMS Hazard #1 During Routine Responses).
- ▣ Heart Disease (EMS Hazard #2 During Routine Responses).
- ▣ Violence (EMS Hazard #3 During Routine Responses).
- ▣ Base of Operation – Physical Hazards.
- ▣ Thermal Extremes.



Note: Use a system you are familiar with to identify plausible hazards (JSA; ICS-215A; T.R.A.C.E.M.).

# HERA: Medical Clearance

- ▣ Immunizations and Chemoprophylactic Recommendations.
- ▣ Injury Prevention – Physical Requirements.
- ▣ Alcohol, Medication and Phototropic Drug Contraindications.
- ▣ HARM Qualifications.



# HERA: Medical Clearance

- ▣ HARM – Risk of Injury or Illness.
- ▣ Job Tasks (40 lb. Carry).
- ▣ Medical Devices (Casts-Prohibition).
- ▣ Those at Risk for Thermal Conditions-Prohibition.
- ▣ Poorly or Uncontrolled Chronic Medical Conditions.
- ▣ Acute Health Conditions (Including Recent Hospitalization and Surgery).
- ▣ Use of Powered Medical Equipment.
- ▣ Special Diets.

Note: All Responders Must See the HERA Prior to a Response!

# EXERCISE #3



## ASPR Response Hazard Exposure Risk Assessment (HERA) & Force Health Protection (FHP) Plan OPEO Chief Medical Officer Program

- Before You Deploy:**
- Review the **Anticipated Hazards and Safety Actions** in this document
  - Review the **Medical Clearance Process for Response Personnel** (p. 5)
  - Clinical Personnel – Ensure Proper Vaccination**
  - Do Not Deploy if Sick or Injured**

**Mission:** ESF-8 response to Hurricane Irene 2011 Eastern U.S. Seaboard

**Last Updated:** 22-AUG-2011      **Edition:** 1.0      **POC:** emqcmo@hhs.gov

### GENERAL INFORMATION

**Overview:** Hurricane season and emerging storm threats.  
**Scope & Applicability:** The HERA and Health and Safety Plan (HASP) apply to all ASPR-deployed Federal Responders (employees and USPHS Commissioned Corps officers) activated as a part of HHS/ASPR mission.  
**Deployed location:** Impacted communities along the Atlantic Coast of Southeastern U.S. (SEUS). Current focus is S.C., but applicable from Georgia through Virginia.  
**Weather:** Regional humidity is expected to be near 100% at sea level as post-hurricane pools evaporate. August and September highs average in the upper 80s and lows in the 70s F.  
**Worksite circumstances:** ER decompression adjacent to surviving medical structures utilizing BOO Western Shelters and buildings of opportunity, and forward deployed DMAT-A (12-staff "strike teams"). English is the dominant language. Spanish is common, and Gullah or Geechee (English-Patois) spoken on coastal Carolina barrier islands.  
**Quarters:** Billeting may include hotels, indoor space (buildings of opportunity), and/or field tentage. Responders should plan on billeting under austere conditions.  
**Meals:** Depending on the local infrastructure, meals may be obtained locally and/or Meals-Ready-to-Eat (MRE). There are no posted FDA alerts/recalls at this time. Food safety rules preclude the ingestion of food requiring refrigeration, which has been in warm temperatures (i.e. out of refrigeration) for more than four (4) hours.  
**Security:** Intact local law enforcement is anticipated, supplemented by state National Guard as needed. Violent crime may be a plausible risk within displaced communities. Petty theft should also be expected.

### ANTICIPATED OR PLAUSIBLE HAZARDS

Page 1 of 5



### Biological (Immediate Risks):

1. **Blood-borne exposures (Moderate Risk)** Hepatitis B, Hepatitis C and HIV from patient contact during the delivery of medical care.
2. **Mosquito-borne illnesses (Moderate Risk)** West Nile Virus has been reported in the SE and Mid-Atlantic states presenting as a range of febrile or flu-like illnesses.
3. **Tick-borne illnesses (Moderate Risk)** Both Rocky Mountain Spotted fever and Lyme Disease are common and increased in areas with deer populations.
4. **Animal bites (Moderate Risk – High Consequence)** Rabies is endemic in the SE US raccoon and bat populations.
5. **Oral-fecal (Moderate Risk)** sewer systems and septic tanks typically contaminate ground water and coastal shell fish. (Eat / drink ONLY approved sources.)
6. **Respiratory (Moderate Risk)** no specific threats identified at this time. Use PPE as directed by HASP. All individuals who will perform (i.e. be within 8 feet of) high risk procedures must be medically pre-approved to use an N-95 respirator and be fit tested within the last year. Medical, personnel who mobilize PRIOR to the establishment of a MOBILIZATION CENTER must possess this approval.

### Environmental:

**High Risk:** Heat Stress Injury, sunburn, vector bites, Transportation (see below).  
**Moderate Risk:** drowning, stings from washed up sea creatures' ocean debris, and bites from feral animals.

**Social:** Theft, assault, and potential verbal abuse from frustrated victims, off-medication psychiatric patients, drug- and alcohol-dependent in withdrawal.  
**Transportation (High Risk)** Crashes and non-crash injuries are the #1 cause of pre-hospital responder death and injury.

### RECOMMENDED SAFETY ACTIONS (OVERVIEW):

**Refer to Health and Safety Plan (HASP) for this event for additional information.**

1. **General concepts:**
  - a. If hazards are identified: notify the safety officer, remove or mark the hazard, perform administrative or engineering actions as necessary to reduce the risk
  - b. Utilize PPE as appropriate (see the HASP document); use Standard Precautions at a minimum during patient care
  - c. Do not utilize local water supply for any drinking (including toothbrushing) unless confirmed to be safe by local public health officials
2. **Required immunizations (OSHA):** For positions involved in direct patient care activities and/or handling of biologic waste. Employer must offer **Hepatitis B** vaccine to those individuals deemed at risk for exposure to blood or body fluids.

Page 2 of 5



(Exercise #3)

# Section #3: Planning for a Safe Response

- ▣ The Health and Safety Plan (HASP)
  - ▣ The Safety Bulletin!!!



# Health and Safety Plan (HASP)

The Health and Safety Plan (HASP) is developed by the Chief Safety Officer with the assistance of the CMO (use a complete format that works for you! [ICS-208; NIOSH-HASP]).

## Section A: Introduction/Background:

- ❑ Program Management.
- ❑ Reporting (Incidents, Accidents and Near-Miss Reporting).
- ❑ Worker Rights and Responsibilities – Refuse Work Protocol.
- ❑ Worker Rules.
- ❑ Situational Assessment.
- ❑ Vaccination and Pre-Event Medical Screening Requirements (HARM and HERA).

# Health and Safety Plan (HASP)

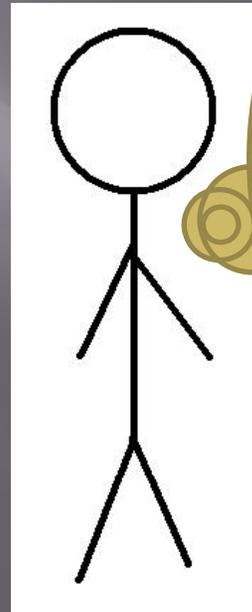
## Section B: Emergency Procedures:

- ▣ Alerting (NOAA/Lookout/Communication Posts).
- ▣ Alarming.
- ▣ Evacuation Routes and Rally Points (Primary and Distant).
- ▣ Accountability (Process to address individuals who do not meet accountability procedures).
- ▣ Shelter In Place Requirements (Go-Kits).
- ▣ Extraction Procedures.

# Health and Safety Plan (HASP)

## Section C: Job Hazards - Analysis:

- ▣ Job Hazard Analysis.
- ▣ ICS-NDMS-215A.



OSHA Hierarchy of Controls:

- Elimination (or substitution of less hazardous materials).
- Work Practice/ Administrative Controls.
- Engineering Controls.
- P.P.E.

(Exercise #4: ICS-215A)

# Health and Safety Plan (HASP)

## Section D: Personal Protective Equipment:

### ▣ 29CFR1910.132(d) Certification:



- Head Protection – ANSI Z.89.1-2009 [G, E, C; Type I or II; LT; HV; Reverse Pictogram].



- Eye/Face Protection – ANSI.87.1 – 2010.



- Foot/Shoe Selection – ASTM.F2412-2413 – 2005 [ASTM-2005; MF; C30, 50, 75; 1-30, 50, 75; MT; PR; EH; SD; Cd; CS; DI].

# Health and Safety Plan (HASP)

## Personal Protective Equipment (continued):



- Hand Protection – ANSI/ISEA 105 – 2011:
  - Cut Resistance 0-5.
  - Puncture Resistance 0-5.
  - Abrasion Resistance 0-6.
  - Chemical Permeation 0-6.
  - Chemical Degradation 0-4.
  - Heat Degradation 0-4.
  - Conductive Heat 0-4.
  - Anti-Vibration (Pass-Fail).
  - Dexterity 1-5.



- Reflective Clothing – ANSI – Class I (< 25 mph [separated from traffic]), II (25-50 mph), III (> 50 mph).

# Health and Safety Plan (HASP)

- ▣ Respiratory Protection Program:
  - Covers Both Voluntary and Required Respirator Use (Except for Voluntary Dust Masks Use).
  - Establishes Recordkeeping Practices for Documents Relative to the Respirator Standard.
  - Requires a Written Respirator Program, Specific to Job Sites and Practices, in Compliance with the New Standard (9 Mandatory Components).
  - Written Programs Must Include Specific Selection Criteria for Respirators, Schedules for Cartridge Changes if Cartridge Respirators are Used, and Quality of Breathing Air, if Supplied Air Respirators are Used.

# Health and Safety Plan (HASP)

- ▣ Respiratory Protection Program (*continued*):
  - Requires an Initial Medical Checklist Completion or an Initial Physical, the Availability of Health Consultation and Health Care Professional Clearance in Certain Situations.
  - Requires Use of the OSHA Protection Factors for Respirator Selection Criteria.
  - Requires Annual Quantitative and/or Qualitative Fit Testing for All Respirator Users.

# Health and Safety Plan (HASP)

- Respiratory Protection Program (*continued*):
  - Requires Initial and Annual Training, and at Times of Changes to Written Respirator Programs and Instructions.
  - Requires Designation of a Qualified Program Administrator, and an Annual Program Evaluation and Audit, Including Discussions with Respirator Users.
  - Identifies Order of Permissible Exposure Limit Use, for Enforcement Purposes (OSHA, ACGIH, NIOSH, MSDS).

# Health and Safety Plan (HASP)

- Respiratory Protection Program (*continued*):
  - Identifies Tagging and Check/Maintenance Protocol for Respirators and Compressors.
  - Gives Specific Emergency and IDLH Requirements for Respirator Use, and Maintenance of Respirators Used During IDLH or Emergency Response Work.

# Health and Safety Plan (HASP)

- Hearing Conservation Program:
  - ID Noisy Areas.
  - Test Noisy Areas.
  - Implement a Hearing Conservation Program.
- The NRR Conundrum:
  - Old:
    - $NRR_{OLD} - 7 > dB_{A[TIME]}$ .
  - New:
    - Range Published: (80% - 20%), applied directly to the NRR, with fit test options.



(Extra Credit: What is a dB?)

# Health and Safety Plan (HASP)

- Infection Control Program:
  - BBP – OSHA Requirements.
  - Infection Control.
  - Immunization Schedules (ACICP).

# Health and Safety Plan (HASP)

## Section E: Training:

- ▣ Onsite Training:
  - Evacuation Signals and Locations – Primary, Secondary and Shelter In Place.
  - Emergency and Safety Equipment Procedures for Use.
  - Accountability.
  - Site Specific Safety and Health Requirements.
  - Sanitation.
  - Infection Control/Illness Prevention.
  - Security (including use of the Buddy System).
- ▣ Safety Messages/Safety Bulletins (What's the System?).

# Health and Safety Plan (HASP)

## Section F: General Safety and Health Requirements:

- ▣ Team SOFR (Safety Organization).
- ▣ Hand and Power Tools.
- ▣ Specific Safety and Health Issues (Heat/Sun/Insects/Safety in Crowds).
- ▣ Illumination: 5 ft. Candle (Exits); 10 ft. Candle (Work Areas); 50 ft. Candles (Medical Ops).
- ▣ Hearing Conservation:
  - Noisy Areas Identified.
- ▣ Noise :
  - Testing.
  - Base Line Audiograms.
  - Required Use of Hearing Protectors During Evaluation Periods.

# Personal Safety

- ▣ Ionizing Radiation (Markings; Dose Monitoring/Estimation; Pregnancy Declaration).



- ▣ Severe Weather:

- Lightning Safety: “30-30 Rule”.
- Earthquake Preparations.
- Post Storm Activities: Evaluate Before Re-Entry.



# Personal Safety

## Working On or Near Water:



Type I



Type II



Type III

ICS-206

ASPR  
Force Health Protection and Medical Emergency Plan  
ICS-206

1. Contact Fire Station and provide first aid/first aid CPR as necessary.  
2. Access EMS System if an emergency area and if EMS systems in your (STATE), ANY INDIVIDUAL SENT TO AN URGENT CARE/HOSPITAL, MUST HAVE A CA-16 FORM (SIGNED, AUTHORIZING TREATMENT) OR EMERGENCY MEDICAL TRANSPORT LISTED ABOVE.  
3. Complete notification and reporting procedures.

NOTE: ALL FORMS COMPLETED MUST BE SCANNED AND ATTACHED TO THE ICS-206 FOR THE EMPLOYEE.

1. Fill out OSHA Form 301 and forward to IRICT Safety Officer & CMD by 0000 next operational period. The IRICT Safety Officer will maintain the OSHA 300 Injury and Illness Log.  
2. Civil Service personnel  
3. CA-16/CA-16/CA-16 forms completed & submitted to the IRICT Admin/Finance, as well as attached to the EHR for the employee.  
4. ICRHS Command and Control  
5. Access TICing at [www.kodiak.net](http://www.kodiak.net)  
6. IRICT Safety Officer

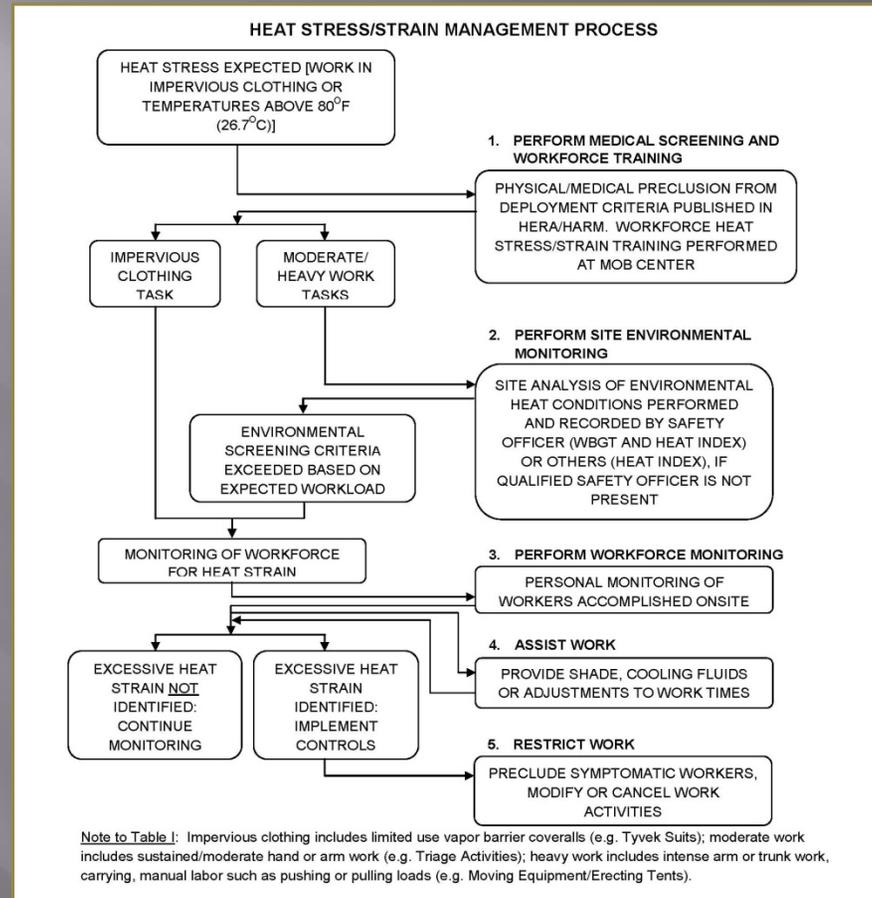
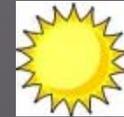
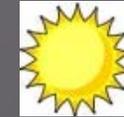
(ICS-206: Force Health Protection and Medical Emergency Plan)

(Exercise #5: ICS-206: Identify one (1) additional item of importance to your service, which may be placed/planned on an ICS-206 form).

# Personal Safety

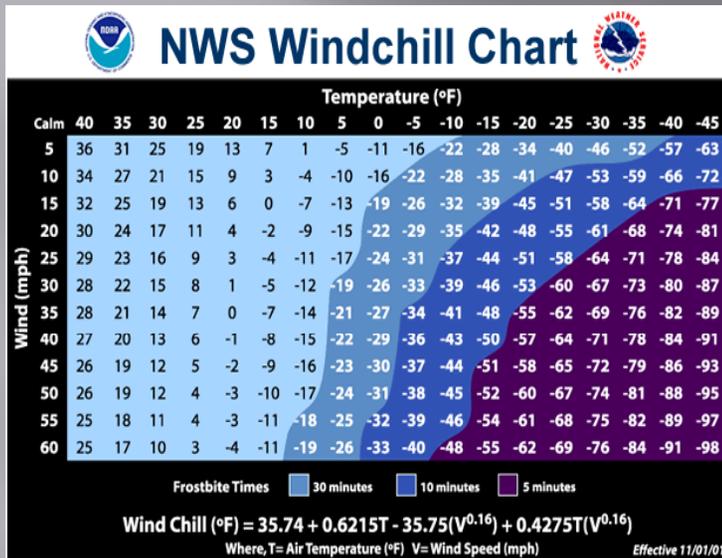
- ▣ Pre-Response Medical Requirements.
- ▣ Medical Records Access and Retention (29CFR1910.1020).
- ▣ Work – Rest Regimens (2/1)!
- ▣ Thermal Extremes:
  - Heat Trigger!  $>79.8^{\circ}\text{F}$  (or Impervious Clothing).
  - Cold Trigger!  $<30.2^{\circ}\text{F}$  (or Specific Evaporable Concerns).

# Work Regimen, Heat



## (Handout #2: Heat Stress/Strain Management Process)

# Work Regimen, Cold



## HANDOUT #3 WORK REGIMEN, COLD

ECT	Action
19.4°F (ECT)	<ol style="list-style-type: none"> <li>Safety Officer is present on each worksite to observe work.</li> <li>Warning locations and warning regimens are established.</li> <li>Warm, sweet drinks should be provided to ensure calorie intake and fluid volume. Limit coffee intake due to diuretic and circulatory effects.</li> </ol>
10.4°F (ECT)	<ol style="list-style-type: none"> <li>Buddy system all work (constant, continuous supervision).</li> <li>Work regimens should be adjusted to preclude sweating and ensure standing still for extended periods is minimized.</li> <li>Briefing of workers occurs (warm-up procedures; clothing practices; eating and drinking recommendations; recognition of frostbite; signs and symptoms of hypothermia; safe work practices).</li> </ol>
0°F (ECT)	<ol style="list-style-type: none"> <li>Hand coverings required.</li> </ol>
-11°F (ECT)	<ol style="list-style-type: none"> <li>Medical certification of workers required.</li> </ol>
-25°F (ECT)	<ol style="list-style-type: none"> <li>Work with the exception of lifesaving activities is precluded.</li> </ol>

### WORK/WARM-UP SCHEDULE FOR A 4 HOUR SHIFT

Air Temperature °C (approx.)	Sunny Sky °F (approx.)	No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
		Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm. Breaks) 1	1	(Norm. Breaks) 1	1	75 min	2	55 min	3	40 min	4
-29° to -31°	-20° to -24°	(Norm. Breaks) 1	1	75 min	2	55 min	3	40 min	4	30 min	5
-32° to -34°	-25° to -29°	75 min	2	55 min	3	40 min	4	30 min	5	Non-emergency	
-35° to -37°	-30° to -34°	55 min	3	40 min	4	30 min	5	Non-emergency			
-38° to -39°	-35° to -39°	40 min	4	30 min	5	Non-emergency					
-40° to -42°	-40° to -44°	30 min	5	Non-emergency							
-43° & below	-45° & below	Non-emergency Work should cease									

(Handout #3: Work Regimen, Cold)

# Sanitation

## Section H: Sanitation:

- ▣ Hand Washing.
- ▣ Water Classifications – Potable, Gray, Black.
- ▣ Toilets (20 to 1!).
- ▣ Covered Trash Receptacles.
- ▣ Food Safety:
  - Cleaning of Food Service Areas (X3 Daily).
  - Refrigerate Food Requirement: 2 Hours (1 if > 90°F).
  - 6,000 Calorie (2 MRE: Recommendations).
  - 100 oz. (Cool) – 150 oz. (Hot) Water Intake.

# Air Quality

Qualitative Evaluations.

Quantitative Evaluations.

Remember: You May Have 24 Hours of Exposures.

- ▣ CO – (9 ppm).
- ▣ CO<sub>2</sub> – (1,000 ppm or < 3X's Ambient Levels).
- ▣ Dusts - < 5mg/ m<sup>3</sup>.
- ▣ rH - < 60%

Note: Mold actions > 100 ft<sup>2</sup> require specialized procedures [NYCDOHMH – Guidelines].

# Air Quality

Air Quality Index (AQI) Values	Levels of Health Concern	Colors
0-50	Good	Green
51-100	Moderate	Yellow
101-150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

[Ground Level Ozone; Particulates; CO; SO<sub>2</sub>; NO<sub>2</sub>].

# Transportation and Vehicle Roadway Safety

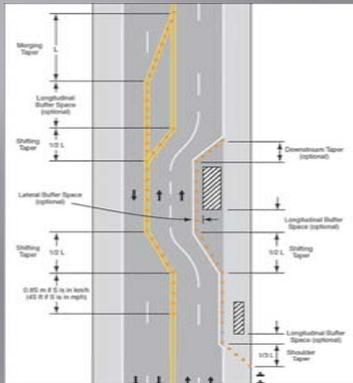
## Section I: Transportation and Vehicle Roadway Safety:

- ▣ Commercial Vehicle Licensing.
- ▣ International Vehicle Licenses.
- ▣ Parking – Location and Direction.
- ▣ Vehicles – Marked, Attended, Chocked.
- ▣ Passengers – Seat Belts/Rear Riding Prohibition.
- ▣ Powered Industrial Trucks.

# Traffic Control on Roadway (MUTCD)



Advanced Warning Signs (4X – 8X  
Posted Speed Limit).



Shoulder Taper: Cone Spacing 1X  
Posted Speed Limit).

Buffer Zone (Described by Speed  
Limit and Stopping Distance)

# Fire Protection

- ▣ Fire Extinguishers:           2A/75 feet.  
  20B/30 feet (adjacent).
- ▣ Electrical Power Lines:    10 feet if < 50 kV.  
  20 feet (for most).

All Power Lines are Considered Live!!!

# Temporary Buildings

- ▣ Temporary Buildings (<180 days meet IFC >180 days meet (B)).
  - X2 Exits (Adequately Lighted) [Deadbolt Prohibition].
  - Doors Identified and Swinging in Direction of Travel.
  - (1) – 2A: 10BC Fire Extinguisher.
  - Generator: 50 Feet from Structures(CO/Fire Detectors for Sleeping Locations).
  - Hand Rails on Steps.

# Hazard Communication – Hazard Substances

- ▣ MSDS Compilation.
- ▣ Employee Training and Information.
- ▣ Labels.

# Security

- ▣ Security Survey (Similar to ICS-215A).
- ▣ Security Control Location.
- ▣ Identification Program.
- ▣ Lethal Weapons Prohibition.
- ▣ Offsite (Off-Boo) Security and Accountability Protocol.
- ▣ Procedures to Respond to Accountability Breaches.

# Logistics Safety

## Section L: Logistics Safety:

### ▣ Warehousing:

- Aisle Clearance and Block Height.
- Training/Certification for P.I.T.
- Cylinder Handling Protocol.
- Maximum Lift 50 lbs (NIOSH recommends a Max Lift of 51 lbs, adjusted downward for repetitive events).
- Chemical Storage for MSDS.
- PPE (Goggles for chemical mixing).

# NIOSH Lifting Equation

$RWL = LC \times HM \times VM \times DM \times FM \times AM \times CM$   
where:

- ▣ LC = Load Constant
- ▣ HM = Horizontal Multiplier
- ▣ VM = Vertical Multiplier
- ▣ DM = Distance Multiplier
- ▣ AM = Asymmetrical Multiplier
- ▣ FM = Frequency Multiplier
- ▣ CM = Compiling Multiplier

$LI = \frac{\text{Load Weight}}{RWL}$

# Summary

## Summary:

- 1) Know the Differences Between Typical and Atypical Disaster Responses.
- 2) Assess Hazards and Identify Risks.
- 3) Plan for a Safe Response.

Homework: LF/HC + Training/Activity = HF/HC.

???

## Questions