A QUESTIONNAIRE ON HEAT STRESS

The US Utility GPU Nuclear has initiated a study on Heat Stress problems in the Nuclear Power Industry. The BNL ALARA Center is assisting GPU in this study. The results of the study will be shared with those who fill out this questionnaire. If you wish to participate in this study please complete the attached form and return it to:

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Basic information about yourself

Title: ___________________________ Last Name: ___________________________
First Name: ___________________________

Job title: ___________________________

Organization: ___________________________

Nuclear Power Plant: ___________________________

Address: ___________________________

Phone: ___________________________ Fax: ___________________________
1.0 Experience

Please provide the criteria you use to define heat stress at your facility.

- In the past three years, has your facility experienced episodes of occupation heat illness, heat stress, or heat related injury?

- Has your facility recorded heat related, restricted duty, or lost time accidents?

- What percentage of heat stress episodes are identified and reported?

2.0 Program Administration

- Do you have a formal program for heat stress management?

- What organizational element is responsible for heat stress program management?
  
  __________ Medical
  __________ Human Resources
  __________ Safety
  __________ Health Physics
  __________ Other (specify)

- What are the basis documents for your heat stress management program?

3.0 Program Elements

If your facility has a formal heat stress management program, indicate which of the following elements are present.

- Pre-job evaluation by knowledgeable professional
Written guidance on stay times based on
- temperature
- humidity
- work effort
- protective clothing
- use of personnel cooling devices
- use of engineering controls

- Employee Training
- Medical Evaluations
- Personnel Monitoring
- Post job review for heat related experiences

4.0 Job Evaluation & Counter Measures

- Do you evaluate jobs and maintain a list of potential "heat stress" jobs?

- Do you or have you collected data on candidate heat stress jobs such as typical temperatures, humidity, radiant and convective heat sources use of protective clothing, type of work? (e.g. level of effort)

- Do you have a structured preventive program including use of one or more of the following?
  - acclimatization
  - modification of protective clothing
  - use of central or local air conditioning
  - hydration regimes
  - use of personnel protective devices
  - insulation of hot surfaces

5.0 Environmental Evaluation

- Do you or have you used the following techniques?
  - dry bulb temperature (e.g. regular thermometer or electric thermometer)
  - WBGT
  - sling psychrometer

6.0 Personnel Protective Equipment

- Do you or have you used the following?
  - ice vests
  - circulating air garments
  - chilled water cooling garments
  - reflective clothing
HEAT RELATED ILLNESS OR INJURY CASE EVALUATION

Please make copies of this form and complete one copy for each instance of heat stress, illness, or injury.

1. Date of Event: __/__/____
   Month    Day    Year

2. Time of Event: __________
   - In what hour of the shift did the episode occur? ________
   - What was the duration of exposure in the hot environment? ________
   - Did the episode occur on a day following a weekend or other scheduled days off? ________

3. Ambient Temperature (dry bulb): _____ °F/C (circle one)

4. Relative Humidity: estimate if not known _____ %

5. Work Area: (e.g. drywell, fuel transfer canal, steam generator, containment reactor cavity)

6. Plant Mode:
   ___ Operating    ___ Refueling Outage    ___ Other (specify) ______

7. Job Description: Specify level of work efforts (see Attachment 1 for examples)

8. Job Duration: __________________________

9. Protective Clothing Used: __________________________

10. Employee(s):
    Station worker ___ YES ___ NO    Age ______
    Contractor     ___ YES ___ NO    Height ______
    Gender       (M) ___ (F)    Weight ______
11. Smoker: 

12. Known Medical Condition: 

- Diabetes Mellitus 
- Hypertension 
- Thyroid Disease 
- Cardio-Respiratory Illness 
  - Angina/Atherosclerotic Heart Disease 
  - Chronic Obstructive Pulmonary Disease 
  - Pneumoconiosis 
  - Asthma 
- Acute Infections 
  - Respiratory 
  - GI (vomiting, diarrhea in recent past) 
- Prescription Medication (specify below) 

13. Symptoms/Signs Observed: 

- Increased Body Temperature 
- Flushing 
- Sweating 
- Dizziness/Lightheaded 
- Cardiac Rate Changes (Brady-Tachycardia) 
- Hypo-, Hypertension 
- Muscle Cramps/Tetany 
- Loss of Consciousness 
- Chest Pain 
- Other (specify) 

14. Treatment Provided: 

- Removal to cool environment 
- Fluids, oral 
- Fluids, parenteral 
- Ice packs 
- Water compresses 
- Hospitalization 

15. Follow-up Actions: 

- None 
- Restricted Duty 
- Lost Time 
- Other (specify)
HEAT RELATED ILLNESS OR INJURY CASE EVALUATION

Examples of Activity Levels (Question 6.1)

LIGHT ACTIVITY

sit/stand still
walk slowly
inspect visually
calibrate instruments, etc
operate equipment controls
work with hands only

MODERATE ACTIVITY

walk
survey environment
sort materials
turn valve manually
work with arms and hands

HEAVY ACTIVITY

handle materials manually
mop/sweep
derontaminate manually
hoist manually

VERY HEAVY ACTIVITY

handle heavy materials
climb stairs/ladders
scrub/brush/scrape
saw manually
shovel