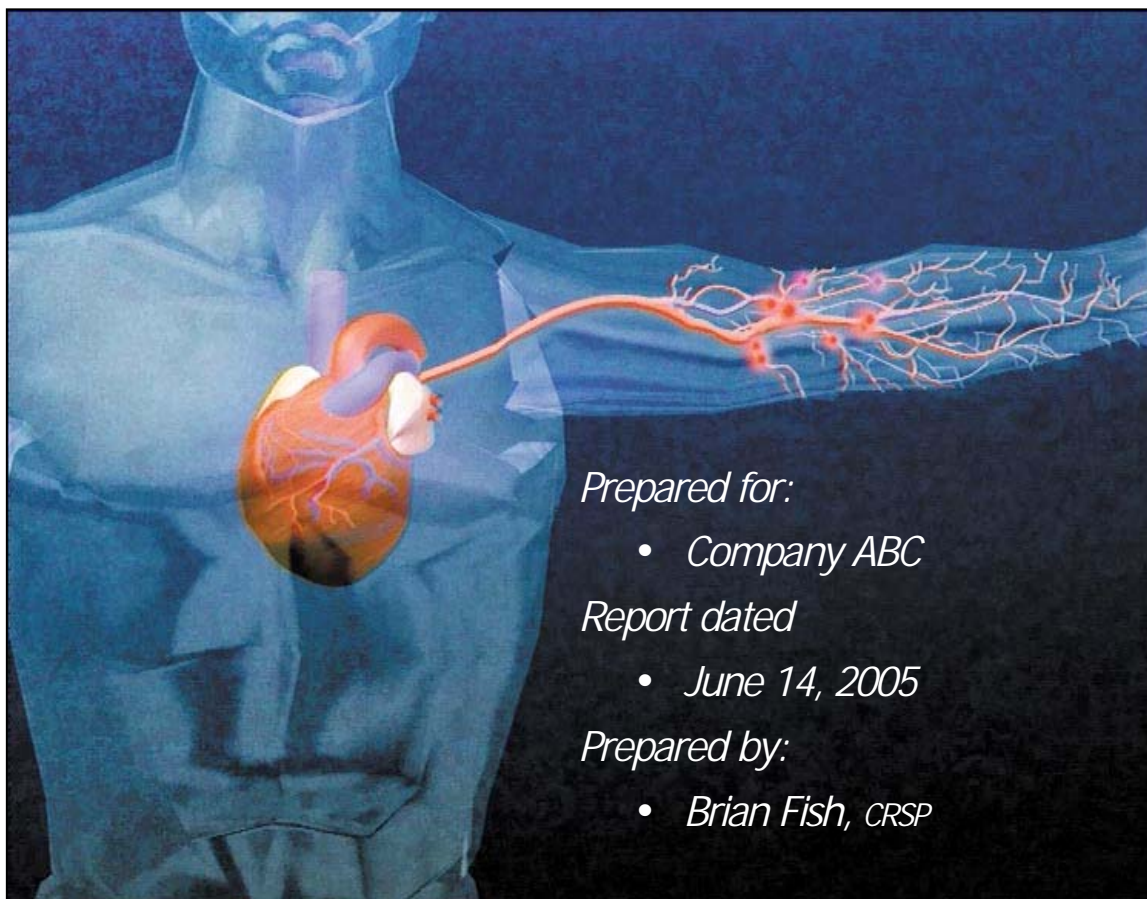


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Occupational Hygiene Report

Heat Stress



Heat Stress Report

Any use of which a third party makes of this report, or any reliance on, or decisions to be based on it, are the responsibility of such third parties.

STACS Inc., accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made, or actions based on this report.

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Introduction

STACS Inc. was hired by Company ABC to perform heat stress measurements at its location in Toronto, Ontario.

Specifically, the project involved evaluating the Wet Bulb Globe Temperature at specific locations throughout the worksite and comparing the results to the company's Heat Stress Management Program.

Methodology

All samples were collected on June 14, 2004 during a time when the plant was running at "regular productions levels". Outside air temperature / humidity, as of 2 pm, was recorded at 27 ° C., 58% relative humidity with a Humidex rating of 33 ° C.

Readings were taken using a WIBGET Heat Stress Monitor (IST model RSS-214) on a direct-reading basis.

Sample times and locations are identified in the body of this report. Results are valid for the date and times tested.

Sample locations were selected based on worker exposure issues, with input from the site Certified Labour Safety Committee member, Mr. J. Doe.

Applicable Standards / Regulations

Heat Stress is not specifically regulated under the Occupational Health & Safety Act / Industrial Establishments Regulations, however the American Conference of Governmental Industrial Hygienists (ACGIH) has established Screening Criteria for Heat Stress Exposure. The ACGIH Heat Stress Values prove to be a useful reference when managing the issue of heat stress in a consistent manner.

Current ACGIH Heat Stress Values have been referenced in this report. Specifically, the referenced values are from the ACGIH "2000 TLVs and BEIs".

The ACGIH document identifies Criterion Values based on the type of work performed (i.e. light, medium or heavy) in relation to the Wet Bulb Globe Temperature (WBGT). The result is a standard that identifies heat stress conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse effects. This should not be interpreted to mean that all work performed in conformance with the Heat Stress Values will be free from the risk of heat stress and heat stroke. Individual susceptibility / personal health issues may make some workers more at risk than others.

As per the ACGIH requirements, the physical effort required to perform the task must be taken into account, since physically demanding jobs will place more heat stress load on the worker. When classifying the jobs tasks as “light, moderate or heavy” as per the ACGIH classification system, it must be kept in mind that “light jobs” may occasionally have “heavy components”, and “heavy tasks” will have “lighter components”. Classifications should be developed with the goal of a fair and accurate classification of the work typically involved in the task, with the continued safety and well being of the worker being the primary objective.

It must be noted that all ACGIH values referenced in the document are for an acclimatized worker (i.e. a worker that is generally accustomed to working in a warm environment). This approach has been taken for practical purposes since the nature of the heat stress load associated with specific work areas is directly related to the outside air temperature. Although it is possible to have a “heat wave” in April when most personnel are not acclimatized to the heat, the bulk of the heat stress within the building will be related to the occasional hot summer day, when most personnel are acclimatized to the warmer temperatures.

The Current ACGIH Heat Stress chart is reprinted below:

Work / Rest Regimen	Work Load		
	Light (°C WBGT)	Moderate (°C WBGT)	Heavy (°C WBGT)
Continuous Work	29.5	27.5	26.0
75% Work / 25% Rest Each Hour	30.5	28.5	27.5
50% Work / 50% Rest Each Hour	31.5	29.5	28.5
25% Work / 75% Rest Each Hour	32.5	31.0	30.0

Results & Observations - Summary

All results indicate heat stress levels **below** the applicable exposure limits. Specific results are provided in the attached report.

Results

General Background

All samples were collected on June 14, 2004 starting at approximately 11:30 am and continuing through until approx. 4 pm. Activity levels were described as “normal” for the duration of the sampling at all sampling locations (i.e. normal pace of work, normal work performed, etc.).

The project was discussed with Mr. A. Smith (Plant Supervisor) and Mr. J. Doe (Certified Labour Safety Committee Representative) before beginning the sampling. All sample locations were reviewed with Mr. Doe.

Doors and windows were open throughout the site, as is typically the case during the warmer summer months.

Results

Location	11:30 am	1:20 pm	2:40 pm	3:50 pm
48" Line Operator Station	21.5 ° C.	22.1 ° C.	23.5 ° C.	22.8 ° C.
16" Coilerman Station	21.8 ° C.	22.6 ° C.	23.4 ° C.	23.1 ° C.
18" Coilerman Station	22.0 ° C.	22.7 ° C.	23.4 ° C.	22.7 ° C.
18" Operator Station	21.9 ° C.	22.1 ° C.	22.2 ° C.	22.7 ° C.
Edgeboard Work Desk	21.7 ° C.	22.0 ° C.	22.5 ° C.	22.8 ° C.
Shipping Work Desk	21.9 ° C.	22.5 ° C.	23.2 ° C.	23.1 ° C.

Interpretation:

With respect to the results, above, the following information should be considered:

- Based on the site’s written Heat Stress Management Program, all tasks within the site are classified as “moderate” work activity, with the exception of the Dressing Operator.
- With a “moderate” work level, the ACGIH Heat Stress Indices allows for continuous work up until 27.5 ° C. Therefore, all results were **below** the applicable ACGIH exposure standard.
- Temperatures generally increased from the 11:30 am sampling through to the 2:40 pm sampling, and then remained fairly constant. Increased wind and slightly cooler outside temperatures in the afternoon helped to hold the inside temperatures relatively stable.

Recommendations

Based on the results of the June 14, 2004 sampling, no immediate action is required (with respect to the heat stress levels measured). However, the following recommendations are submitted for consideration:

1. Since the heat stress within the site is directly linked to the outside ambient temperature, sampling should be repeated on a hotter day. Although this is sometimes difficult to schedule, efforts should be made to perform heat stress measurements on a day where the projected Humidex is in excess of 35° C.
2. Also, sampling should start in the early afternoon and continue into the afternoon shift in order to determine the building's heat characteristics once the outside temperature begins to drop.