



DOW CHEMICAL U.S.A.

July 9, 1985

LOUISIANA DIVISION
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SUBJECT: HEAT STRESS SURVEYS INSIDE STOCK WAREHOUSE
BLDG. 4104

The following surveys were made using the Wet Bulb Globe Temperature Index (WBGT). WBGT values as used here are calculated by the following equation:

$$\text{WBGT (indoors)} = 0.7 \text{ NWB} + 0.3 \text{ GT}$$

NWB = Natural Wet-Bulb Temperature
GT = Globe-Thermometer Temperature

The last column of figures on each page of survey results represents degrees Centigrade WBGT. These can be easily compared to Table 1, Permissible Heat Exposure Threshold Limit Values.

For comparison purposes, included are survey results dated July, 1984 and current results, all taken in same location, west aisle, in warehouse. Also included in current survey are readings taken between bins, where air flow is still restricted.

Two louvered vents have recently been installed in south wall and improvement is significant as shown here. The addition of two more vents in north wall would further improve air flow. All eight roof exhaust fans were running during current survey.

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TABLE 1

PERMISSIBLE HEAT EXPOSURE THRESHOLD LIMIT VALUES
(Values are given in C. WBGT)

WORK - REST REGIMEN	WORK LOAD		
	LIGHT	MODERATE	HEAVY
CONTINUOUS WORK	30.0	26.7	25.0
75% WORK - 25% REST, EACH HOUR	30.6	28.0	25.9
50% WORK - 50% REST, EACH HOUR	31.4	29.4	27.9
25% WORK - 75% REST, EACH HOUR	32.2	31.1	30.0

Higher heat exposures than shown in Table 1 are permissible if the workers have been undergoing medical surveillance and it has been established that they are more tolerant to work in heat than the average worker. Workers should not be permitted to continue their work when their deep body temperature exceeds 38.0 degrees C.

HEAT STRESS SURVEY - STOCK WAREHOUSE - BLDG. 4104

<u>DATE</u>	<u>TIME</u>	<u>WEATHER</u>	<u>WIND-MPH</u>	<u>RELATIVE HUMIDITY</u>	<u>OUTSIDE TEMP. F°</u>	<u>DRY BULB F°</u>	<u>WET BULB F°</u>	<u>GLOBE F°</u>	<u>WBGT F°</u>	<u>WBGT C°</u>
7-5-84	1010A.M.	PC	W-5	75%	99	89	82	89	84	28.9
7-5	1215P.M.	PC	NW 6-7	62%	95	93	82	101	88	31.1
7-5	215P.M.	PC	NW 10	59%	101	97	84	107	91	32.8
7-6	930A.M.	PC	SE 2	75%	88	88	81	88	83	28.3
7-6	1115A.M.	PC	SW 3	65%	92	92	82	97	87	30.6
7-6	100P.M.	PC	SE 6	70%	94	92	83	102	89	31.7
7-6	235P.M.	PC	SW 15	60%	96	94	82	101	88	31.1
7-9	900A.M.	CLEAR	CALM	80%	93	84	79	86	81	27.2
7-9	1100A.M.	CLEAR	SSE 4	69%	93	90	81	95	85	29.4
7-9	100P.M.	PC	SE 3	65%	96	92	82	93	85	29.4
7-9	300P.M.	PC	SSE 3	58%	101	96	83	104	89	31.7

TOTAL 8 ROOF EXHAUST FANS - 1 OUT OF ORDER

(7 RUNNING DURING SURVEY)

2 DOORS - OPEN

2 SMALL VENTS ON NORTH WALL, EAST END, NOT OPEN

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7-10-84

(WEST AISLE)

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<u>DATE</u>	<u>TIME</u>	<u>WEATHER</u>	<u>WIND-MPH</u>	<u>RELATIVE HUMIDITY</u>	<u>OUTSIDE TEMP. F°</u>	<u>DRY BULB F°</u>	<u>WET BULB F°</u>	<u>GLOBE F°</u>	<u>WBGT F°</u>	<u>WBGT C°</u>
6-24-85	900A.M.	PC	E-4	78%	87	85	78	86	80	26.7
6-24-85	1100A.M.	PC	E-4	65%	93	88	78	95	83	28.3
6-24-85	100P.M.	PC	SE-4	62%	99	91	80	93	84	28.9
6-24-85	300P.M.	PC	ENE-2	55%	100	95	81	98	86	30.0
6-27-85	900A.M.	Clear	NW-8	78%	87	83	77	84	79	26.1
6-27-85	1100A.M.	Clear	WNW-10	68%	93	87	79	87	81	27.2
6-27-85	100P.M.	PC	W-8	65%	95	89	79	90	82	27.8
6-27-85	300P.M.	PC	NW-8	62%	98	91	80	93	84	28.9
7-2-85	900A.M.	PC	SW-6	72%	86	82	75	84	78	25.6
7-2-85	1100A.M.	PC	SW-6	63%	93	86	76	87	79	26.1
7-2-85	100P.M.	PC	WSW-7	58%	100	88	76	89	80	26.7
7-2-85	300P.M.	Cloudy	SW-5	52%	93	90	76	91	81	27.2

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(BETWEEN BINS)
HEAT STRESS SURVEY - STOCK WAREHOUSE - BLDG. 4104

<u>DATE</u>	<u>TIME</u>	<u>DRY BULB F°</u>	<u>WET BULB F°</u>	<u>GLOBE F°</u>	<u>WBGT F°</u>	<u>WBGT C°</u>
6-27-85	900 A.M.	84	78	84	80	26.7
6-27-85	1100 A.M.	86	79	89	82	27.8
6-27-85	100 P.M.	90	80	91	83	28.3
6-27-85	300 P.M.	92	80	95	85	29.4
7-2-85	900 A.M.	83	76	83	78	25.6
7-2-85	1100 A.M.	87	76	88	80	26.7
7-2-85	100 P.M.	88	78	90	82	27.8
7-2-85	300 P.M.	90	78	91	82	27.8

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