

Environment Canada Imaging Cover Page

Report N.:



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HUMIDEX AT TORONTO

On June 24, 1965, the Toronto Weather Office introduced a new term designed to measure the combined effect of temperature and humidity during summertime conditions. This new index is called HUMIDEX and represents an effective temperature whose summertime values usually vary between 70 and 100.

This new humidity index is not the same as the discomfort index (also known as the temperature-humidity index), which was used for several years prior to 1965. The discomfort index was not sufficiently sensitive to changes in humidity, and also suffered when used in public forecasts because the value was always numerically less than the temperature. On the other hand, the new HUMIDEX always has a numerical value greater than the temperature and, in fact, the HUMIDEX may be considered to represent an effective temperature consisting of the temperature plus a value in degrees which is dependent upon the humidity.

HUMIDEX may be defined as follows:

HUMIDEX equals temperature in degrees Fahrenheit, plus an equivalent degree value of humidity. The equivalent degree value of humidity can be determined from the dew point by means of a simple table.

The following table relates HUMIDEX to comfort:

<u>Range</u>	<u>Degrees of comfort</u>
70 to 84	Comfortable
85 to 99	Varying degrees of discomfort
100 to 114	Almost everyone uncomfortable
Greater than 115	Many types of labour should be restricted.

In examining the past temperature and humidity data at Toronto it can be shown that HUMIDEX values in excess of 100 have been experienced every summer over the past several decades at Toronto. Table I contains a list of the occurrences of HUMIDEX values of 100 or over in each summer month over the past five years. Values of 100 or more have never occurred prior to 9 a.m., or later than 7 p.m. In the summer of 1964, there were nine days with values of 100 or more, but in 1962 there was only one hour on one day when the value equalled or exceeded 100.

From Table II it can be seen that in recent years the highest HUMIDEX values are usually experienced at 1 and 2 p.m. EST. In fact, this table indicates that 9% of the days in July have HUMIDEX values equal to or exceeding 100 at both 1 and 2 p.m. EST. The actual number of hours over the past five years when the HUMIDEX was equal to or exceeded 100 for the different hours of the day are shown in part "A" of the table, while part "B" shows the percentage of days with at least one hour when the HUMIDEX was equal to or exceeded 100.

TABLE II

RELATIVE FREQUENCY OF HUMIDEX VALUES
OF 100 OR MORE AT TORONTO CITY 1960-64

TIME (EST)

	AM	9	10	11	12	1	2	3	4	5	6	7PM	
(a)	Number of hours in 5 years when HUMIDEX was equal to or exceeded 100												
June				1	1	3	2	2	3	1			
July		1	7	6	10	14	14	11	9	5	3	1	
Aug.			1	1	2	2	3	1					
Sept.			1	3	3	6	5	5	3				
Summer) Season)		1	9	11	16	25	24	19	15	6	3	1	130

(b) Percentage of days with at least one hour when HUMIDEX was equal to or exceeded 100.

June				1	1	2	1	1	2	1			
July		1	5	4	6	9	9	7	6	3	2	1	
Aug.			1	1	1	1	2	1					
Sept.			1	2	2	4	3	3	2				
Summer) Season)		*	1	2	3	4	4	3	2	1	*	*	

* Less than 0.5%.

TABLE III

SOME EXTREME HUMIDEX VALUES AT TORONTO CITY

	TIME	DATE	TEMPERATURE (°F)		RELATIVE HUMIDITY (%)	HUMIDEX
			Dry Bulb	Wet Bulb		
1964	2 PM EST	July 28	93	77	49	109
1963	Noon EST	July 2	91	76	51	106
1962	2 PM EST	July 8	90	74	48	103
1961	2 PM EST	July 22	88	77	62	105
	3 PM EST		89	76	56	105

1955	3 PM EST	Aug. 1	98	75	34	109
1952	1 PM EST	June 26	94	79	52	112
1948	3 PM EST	Aug. 25	101	75	29	113
1936	3 PM EST	July 8	105	78	30	118 *
	3 PM EST	July 9	105	77	28	117
	4 PM EST	July 10	105	77	28	117
	4 PM EST	July 11	97	78	43	113
	4 PM EST	July 12	94	75	42	106
	6 PM EST	July 13	102	79	37	118 *

* Greatest on record.

It is interesting to note that we have not had a HUMIDEX value exceeding 115 since the hot summer of 1936. Over a period from July 8 - 13, 1936, the HUMIDEX maximum each day varied from 106 to 118. Over the past four summers the maximum values have varied from 103 to 109. Some HUMIDEX extreme values at Toronto City are listed in Table III.

The Toronto City weather observations have been taken at 315 Bloor Street West since 1909.

Climatology Division,
Meteorological Branch,
Department of Transport,
315 Bloor Street West,
Toronto 5, Ontario.

MKT/ap
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