

(Garuda Emblem)

**Notification of Ministry of Industry**

**Re: Safety procedure in working environment**

**B.E. 2546 (2003)**

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By the virtue of clause 18 of the Ministerial Regulation No. 2 (B.E. 2535 (1992)) issued pursuant to the Factory Act B.E. 2535(1992) which contains some provisions concerning the limitation of the people rights and liberties that is permissible by the provisions of section 29 together with section 35, section 48 and section 50 of the Constitution of the Kingdom of Thailand, the Minister of Industry hereby issues the Ministerial Notification as follows:

Article 1      In this Notification,

“Heat level” shall mean the average wet bulb globe temperature (WBGT) in working area, measured during two hours of maximum wet bulb globe temperature of normal working condition.

“Wet bulb globe temperature (WBGT)” shall mean temperature in degree Celsius which can be calculated from the following formula.

$WBGT = 0.7 NWB + 0.3 GT$  (for indoor or cloudy outdoor)

$WBGT = 0.7 NWB + 0.2 GT + 0.1 DB$  (for sunny outdoor)

where NWB (Natural Wet Bulb Temperature) = temperature reading naturally from wet bulb thermometer in degree Celsius

GT (Globe Temperature) = temperature reading from globe thermometer in degree Celsius

DB (Dry Bulb Temperature) = temperature reading from dry bulb thermometer in degree Celsius

“Light work” shall mean a kind of work that uses less force or burns less than 200 kilocalories of energy per hour such as writing, typing, data recording, sewing, product inspecting, small assembling, operating machine by foot, supervising a job, etc., or other similar work.

“Medium work” shall mean a kind of work that uses medium force or burns between 200-350 kilocalories of energy per hour such as lifting, pulling, pushing, moving object, pounding, filing, driving a truck or tractor, etc., or other similar work.

“Heavy work” shall mean a kind of work that uses intense force or burns between 350-500 kilocalories of energy per hour such as shoveling, drilling, boring, pounding using hammer, moving object with crane and sling, etc., or other similar work.

## CHAPTER 1

### Heat

Article 2 In working area, heat level shall not exceed standard values prescribed in the table annexed to this chapter.

Article 3 In working area with heat level exceeding the standard value of article 2, a warning sign shall be posted stating the area having noncompliance heat level.

Article 4 In working area with heat level exceeding the standard value of article 2, mitigation measures shall be implemented to keep heat level in compliance with the standard. If the condition cannot be alleviated, personal protective equipment, such as protective cloth, shoes and gloves shall be provided to worker in such area. Training on using such personal protective equipment shall be organized.

Table of heat level standard

Work type	Heat level standard Averaged WBGT, ° C
Light	34.0
Medium	32.0
Heavy	30.0

## CHAPTER 2

### Light

Article 5 Direct light or reflecting light shall not be allowed in working condition.

Article 6 Enough light shall be provided in working area so that obstacle, dangerous moving objects, electric circuit, including staircase and exits shall be clearly visible in case of emergency according to the following.

- (1) For the road or outdoor walkway, light intensity shall be at least 20 LUX or 2 foot candle.
- (2) For indoor walkway, balcony, staircase, restroom, recovery room, storage room without material transfer, light intensity shall be at least 50 LUX.
- (3) For working area of coarse work such as rice milling area, cotton sorting area, or preliminary step of industrial process, and products transfer point, security office, elevator, changing room and locker, and lavatory and toilet, light intensity shall be at least 100 LUX.
- (4) For area of work requiring little detail such as coarse work on a desk or machine with the workpiece size of more than 750 micrometers (0.75 millimeters), visual inspection of work, counting, inspection of large object, and in the storage facility, light intensity shall be at least 200 LUX.
- (5) For area of work requiring small detail such as area of cloth distribution, medium size wood working, liquid bottling or dispensing in a can, drilling a hole, gluing, book binding, light intensity shall be at least 300 LUX.

In the working area where there is a workpiece of at least 125 micrometers (0.125 millimeters) in size such as office work, i.e., typing, writing and reading, car assembly, detailed woodworking, light intensity shall be at least 400 LUX.

- (6) For area of work requiring average detail such as drawing, painting, and color spraying and detailed color decorating, proofreading, and final inspection in car manufacturing process, light intensity shall be at least 600 LUX.
- (7) For area of work requiring great detail with the size of work at least 25 micrometers (0.025 millimeters) such as detail inspection, i.e., instrument calibration, painting, coloring, specially detailed decorating, dyeing, light intensity shall be at least 800 LUX. For area of inspecting hand-sewing cloth, inspecting and decorating textiles or

yarns of light color by hand, sorting and comparing leather color, color comparison in cloth dyeing, light intensity shall be at least 1200 LUX.

(8) For area of work requiring very great detail such as detail work on a desk or machine with the workpiece size of less than 25 micrometers (0.025 millimeters), inspection of small parts or small components, product repair, textile with light color, inspecting and decorating textiles or yarns of dark color by hand, light intensity shall be at least 1600 LUX.

(9) For area of work requiring specially great detail such as inspection of very small workpiece, jewelry, diamond cutting, watch manufacture, knitting, cloth repair, light intensity shall be at least 2400 LUX.

Article 7 Light intensity in working area or for work types other than what prescribed in article 6 shall also be provided in equivalent to a minimum of the criteria specified.

### CHAPTER 3

#### Noise

Article 8 Noise level in working area shall be control not to exceed standard values prescribed in the table annexed to this chapter.

Article 9 No person shall be allowed in the area with noise level of greater than 140 decibel A.

Article 10 In working area with noise level exceeding the standard value of article 8, a warning sign shall be posted stating the area having noncompliance noise level.

Working period in 1 day that exposes to noise (hrs)	Average noise level throughout working period, Less than (decibel A)
12	87
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

Note: If there is no standard noise level set out for certain working period, the following formula shall be applied;

$$T = \frac{8}{2^{(L-90)/5}}$$

Where T = working period allowed to expose to noise (hr)

L = noise level (decibel A)

Only integer of the calculated value shall be used as average noise level.

## CHAPTER 4

### Measurement and analysis of working environment

Article 11 Measurement and analysis of working environment shall be conducted and used to prepare an annual report on working environment of heat level, light, and noise level. The report shall be approved and certified by safety officer who graduate with high vocational certificate or bachelor degree of science. The report shall be kept onsite readily for an inspection by a competent official.

Article 12 Measurement of heat level shall be done in a normal working condition in the area of high heat level, in the month of warm climate. Factory types required to conduct such heat measurement shall be as prescribed in list 1 annexed to this Notification.

Article 13 Measurement of light intensity shall be done in a normal working condition in the area of low light intensity. Category 3 factories shall be required to conduct such light.

Article 14 Measurement of noise level shall be done in a normal working condition in the area of high noise level. Factory types required to conduct such noise measurement shall be as prescribed in list 2 annexed to this Notification.

Article 15 Measurement and analysis shall be done in accordance with international standard such as standard of Occupational Safety & Health Administration (OSHA), standard of National Institute Occupational Safety and Health (NIOSH), etc., or other methods approved by Department of Industrial Works.

CHAPTER 5

Miscellaneous

Article 16      This notification shall be effective on the expiration of 180 days from the  
d a t e   o f   i t s   p u b l i c a t i o n   i n   t h e   G o v e r n m e n t   G a z e t t e .

Announced on the 6<sup>th</sup> November B.E. 2546 (2003)

(signed)\_\_\_\_\_

(Mr.Somsak Thepsutin)

Minister of Industry

(Published in the Government Gazette, Volume 120, Special Part 138d, dated 3<sup>rd</sup> December B.E.  
2546 (2003))

**List annexed to the Notification of Ministry of Industry**  
**Re: Safety procedure in working environment**  
**B.E. 2546 (2003)**

**List 1: Factory types required to conduct heat measurement**

Type	Types as prescribed in the list annexed to the Ministerial Regulation (B.E. 2535 (1992)) issued pursuant to the Factory Act B.E. 2535 (1992)
11(3)(4)	Manufacture of sugar, white sugar, and purification of sugar
22(3)	Finishing of textiles
38(1)(2)	Manufacture of pulp, paper, cardboard, fibrous paper for construction, or fiber sheet
51	Manufacture of rubber tyres; retreading and rebuilding of rubber tyres
54	Manufacture of glass, glass fiber or glass product
57(1)	Manufacture of cement, lime, or plaster cement
59	Manufacture of basic iron and steel
60	Manufacture of basic nonferrous metals
61	Manufacture of cutlery, handtools, and general hardware
62	Manufacture of furniture made of metal or metal alloy
63	Manufacture of fabricated metal product used in construction
64	Manufacture of fabricated metal product
65	Manufacture of engines, turbines, and associated parts
66	Manufacture of agricultural and forestry machinery
67	Manufacture of machine tools
68	Manufacture of machinery for mining, quarrying, paper industry, chemical industry, food industry, textile industry, printing industry, cement industry, construction, mining, petroleum industry
(74)(1)	Manufacture of electric lamps and lighting equipment
77	Manufacture of motor vehicles
78	Manufacture of motorcycle, tricycle, or bicycle
79	Manufacture of aircraft, spacecraft, and hovercraft ship
80	Manufacture of other transport equipment
88	Production, transmission, and distribution of electricity
98	Washing and (dry-) cleaning of textiles and fur products
100(6)	Manufacture of fabricated metal product without heat treatment
102	Steam and hot water supply
Note: Factory types 61-68 and 77-80: apply only to those with metal smelter. Factory type 98: apply only to the one with dyeing process	

**List annexed to the Notification of Ministry of Industry**  
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**List 2: Factory types required to conduct noise measurement**

Type	Types as prescribed in the list annexed to the Ministerial Regulation (B.E. 2535 (1992)) issued pursuant to the Factory Act B.E. 2535 (1992)
3(1)	Quarrying of stone
11(3)(4)	Manufacture of sugar, white sugar, and purification of sugar
14	Manufacture of ice
20(3)	Manufacture of carbonated beverages (only the one using glass bottle)
22(2)	Production and spinning of textile fiber; weaving of textile
34(1)(2)(3)(4)	Sawmilling and planning of wood. Manufacture of veneer sheets, manufacture of plywood, laminboard, particle board and other panels and boards
38(1)	Manufacture of pulp from wood or other materials
53(9)	Recycling of plastic waste and scrap
61	Manufacture of cutlery, handtools, and general hardware
62	Manufacture of furniture made of metal or metal alloy
63	Manufacture of fabricated metal product used in construction
64	Manufacture of fabricated metal product
65	Manufacture of engines, turbines, and associated parts
66	Manufacture of agricultural and forestry machinery
67	Manufacture of machine tools
68	Manufacture of machinery for mining, quarrying, paper industry, chemical industry, food industry, textile industry, printing industry, cement industry, construction, mining, petroleum industry
77	Manufacture of motor vehicles
78	Manufacture of motorcycle, tricycle, or bicycle
79	Manufacture of aircraft, spacecraft, and hovercraft ship
80	Manufacture of other transport equipment
88	Production, transmission, and distribution of electricity
Note: Factory types 61-68 and 77-80: apply only to those with metal working	