

# Garment factories of Dhaka City Blessing or bane

DR NIZAMUDDIN AHMED

FOR more than one reason, factory buildings supporting the booming garment industry in Bangladesh have been located in the urban areas of mainly Dhaka and to some extent Chittagong. A vast majority of the factories are housed in existing buildings, designed as either commercial or residential accommodation, because individual units demand large spaces on a very short notice. Moreover, urban areas provide the necessary infrastructure for the industry such as telecommunications, transportation, proximity to primary and secondary industrial sources, electricity and other services, nearness to trade and commercial enterprises, but primarily a vast job market.

The garment factories provide employment to a very disciplined work force of thousands, comprising mainly women. However, these multi-storied garment factories (often several located dangerously in one building) have gradually become an urban nuisance. They have contributed to congestion, traffic problem, shortfall in electricity and water supply, etc.; so much so that there is a growing lobby calling for the removal of these otherwise successful business houses from the city and relocating them in the peri-urban areas. Happily enough, the lobby includes many garment factory owners.

The working conditions in many of these factories are deplorable. Inadequate lighting, poor ventilation, hot and humid environment, over-zealous security system and unsafe conditions are the usual characteristics. Protective measures against theft have severely hindered Means of Escape as is evident from nearly 200 deaths in these factories over the past decade.

Owners of these factories are by and large young and dynamic entrepreneurs who by dint of their professional requirement have wide overseas business experience. Being immensely successful in what they undertook and perhaps believing that the end justifies the means, many owners were for long reluctant to heed to professional advice on improving working conditions, safety and security. Even today some factories will unfortunately convince a visitor that the management is providing the minimum to the workers to derive the maximum.

There is, however, reason for optimism now that the BGMEA, the very effective organisation of the garment manufacturers and exporters, have

come forward to fix their house. They are now inviting constructive criticism and are open to professional advice. In the very near future, we plan to present on this page the programmes undertaken recently by the BGMEA to remove from their factories the menace of fire. It can only be hoped that this welcome attitude will pave the path to improve other conditions that affect the working environment in garment factories.

For the workers, the existing catch-22 situation is a straightforward choice; between do or perish. In the face of acute unemployment and poverty, coupled with the opportunity for the women of a family to earn the much-needed extra income, the workers are willing to work at any cost, literally. The situation may even give the impression that some owners are taking advantage of the circumstances.

For good and also for worse, the garment industry has changed the urban scene of Dhaka. On the one hand, the industry is the major foreign exchange earner for Bangladesh, and provides employment to thousands. But, concurrently it is adversely affecting the fabric and the people of the city.

Will the citizens continue to accept an increasing number of garment factories in the city because of their income and employment potentials? Or, will this flourishing industry be compelled to migrate? Does the government have the strength to provide incentives to the industry to move? Can all the parties concerned emerge as winners in this conflict?

Whosoever wins the October 1 elections shall have to include this debate in their agenda very early in their term.

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Emergency exit blocked by rubbish.



Staircase without railing... factory set up in haste.

## When shall we heed?

Five years ago, we published this article (DS, Oct 21, 1995). One hundred and thirty-four workers and one owner have died in fire-related accidents in garment factories since then.

### FIRE 1: Garment Factories

DR NIZAMUDDIN AHMED

GARMENT factory owners are not taking lessons from the ever-increasing fire-related incidents, some of them fatal. Contrary to its rapid growth, the safety record of this industry has been steadily declining in Dhaka City, the consequences being tragic and alarming.

Twenty-five workers, including 16 women, died in a fire at Saraka Garments, Mirpur on 27 December 1990. Five female workers died and at least 30 others were injured on 11 February 1995 at the Prostor Garments, Mirpur. Most recently, on 5 August, nine teenagers aged 13-19 perished in the Lusaka Fashion garments factory, Ibrahimpur in a stampede resulting from a false fire alarm.

Many accidents and fire incidents in these congested, non-ventilated, ill-lit, hot and humid factories have not been reported in the Press because there were no deaths; such is our bizarre mentality.

If false fire alarms can kill, is it too difficult to imagine the consequences of a real fire? Case studies conducted at BUET show that in some city garment factories the number of deaths due to a fire could be in hundreds. And, this is not a false alarm.

Garments workers have died because they were unable to escape to a place of safety during the emergencies. In the ensuing panic-propelled stampede, escapees were trampled to death. Those unable to escape were initially overcome by smoke and noxious gases, succumbing primarily due to lack of oxygen.

Most garment factories are time bombs for a potential fire disaster. The factory floor and the escape route are crammed with work tops and combustible materials. The risk of fire being ignited is omnipresent due to improper wiring and electrical design, illegal connections, and careless smoking and heating habits. The hazard is multiplied because (a) the narrow exits are often locked, (b) the large illiterate working force is without any fire training or drill, (c) there is no trained personnel to take charge and dispel panic during emergencies, (d) the building has been subjected to unauthorised change, (e) the waste products are not disposed off properly, (f) adequate fire-fighting equipment is not provided and (g) water is forever scarce.

Escape is becoming increasingly difficult as garment factories are being housed in multi-storied buildings with only one narrow staircase. Although, options of multiple doorways and staircases exist in some buildings, most management keep only about twenty-five inches of doorway and collapsible



Narrow corridor serves as entry of several factories on several floors.

gate, and one staircase open during shifts.

Although the maximum travel distance for any occupant to a place of safety should be 30-45metres, the travel distance far exceeds the safe limits. In almost all the garment factories, the travel distance is lengthened because of the layout, as workers would have to travel round machine lines to reach the exit.

In order to avoid suffocation and burns, inmates must reach a place of safety within 2.5 minutes of a fire starting. Owners must ensure by design that adequate numbers of "unlocked" doors of requisite size are located strategically. If the owners apprehend pilferage by employees, they have only to spend more on security by employing more guards for the extra vigil. Alternative escape routes, albeit in the form of optional doors and staircases, should be provided lest one should be made inaccessible during a fire or other emergencies. Occupants should not need to pass through smoke, heat or fire in order to reach a place of safety.

High-risk factories should be compartmented so that fire and/or smoke do not spread between floors through open staircases, or from one end of a large floor to another; thus allowing workers to escape.

Workers have agitated against the Chief Inspector of Factories on 14 August in demand of safer work places and compensation for the victims of the Lusaka incident. This is an attempt by vested quarters to divert the issue. Against this backdrop, it must however be understood that the owners of garment factories or, for that matter, any other factory are primarily responsible for ensuring a safe work place. It is the failure of the Chief Inspectorate and the Fire Service that legislation is not being implemented.

The Fire Service is putting the blame squarely on the Lusaka factory building owner. If the staircases are narrow, factory owners should not rent such places. If, on inspection, the Fire Service finds the staircases narrow, it should not grant the safety certificate. Firemen have blamed the new Lusaka factory for not having sought their approval. Ironically, there are hundreds, nay thousands, of factories which have the Fire Service approval but none of those conform to the legal and/or safety requirements.

The garments sector is a global pride of Bangladesh. It has many obvious enemies. If the frequency of fatal fire incidents increase, envious overseas competitors will take this up as yet another damaging issue. Notwithstanding the international pressure, safety standards in our garment factories should improve because the owners owe it to their highly loyal workers as a moral responsibility.

The Lusaka factory deaths due to panic set on by a false fire alarm are ominous signs. Effective and quick measures must be taken at government, BGMEA, fire service and factory owners levels to prevent a catastrophe. Anything short of this, we are awaiting a national tragedy.



Generator and sand buckets... strange company!

## The Daily Star-Scouts-BUET workshop on fire in garment factories

Extracts of the keynote delivered by Professor Dr. Nizamuddin Ahmed of the Department of Architecture, BUET, at the workshop on September 18 at the Sonargaon Hotel, Dhaka. Architects Md. Tarek Haider and Arman Arif Hossain Chowdhury assisted the professor in preparing the presentation.

### A. Background:

1. Garment factory owners are threatened by fire-related incidents.
2. Contrary to its rapid growth, safety record has been steadily declining.
3. Consequences are tragic and alarming, socially & financially.

### B. General conditions

1. Congested
2. Poorly and inadequately ventilated
3. Ill-lit in non-production area
4. Hot and humid
5. Escape routes are crammed with worktops and combustible materials
6. Improper wiring and electrical design
7. Careless smoking and heating habits

### C. Hazard is multiplied in garment factories because...

1. Factories are located in multi-storied buildings with only "one" inadequate staircase
2. Narrow exits are locked; or, opening is about 18 inches of doorway/collapsible gate
3. Other doors, if available, are kept permanently closed by the management possibly for the following reasons:
  - a. Such doors are "not required" (according to them) for entry/exit
  - b. Less number of gatekeepers need to be employed
4. Closing some doors can create spaces in corridors, etc., which can be used for various other purposes, such as storage/workspace.
5. Machine layout often compels workers to travel round machine lines to reach the exit; exceeding travel distance beyond the safe limits of 25-45 metres
6. Large illiterate working force is without any fire training or drill
7. No trained personnel to take charge and dispel panic during emergencies
8. Building has been subjected to unplanned change
9. Waste products are not disposed off properly
10. Adequate fire-fighting equipment is not provided
11. Water is forever scarce.

### D. Why workers are dying?

1. Inability to escape to a place of safety
2. Stampede, induced by a fire, always propelled by panic
3. Escapees are trampled to death, initially

overcome by smoke and noxious gases, succumbing primarily due to lack of oxygen

### E. Principles of fire:

1. Ingredients of fire: (a) fuel, (b) heat and (c) oxygen
2. Escape time: to avoid suffocation and burns, total population of the space/floor must reach a place of safety within 2.5 minutes of a fire starting.
3. Alternative escape routes: optional doors and staircases so that occupants need not pass through smoke, heat or fire in order to reach a place of safety during a fire or other emergencies.
4. Distance to place of safety: maximum travel distance for any occupant to a place of safety should be 25 metres (45 metres in low-risk occupancies)
5. Number of exits/doors: adequate number of "unlocked" doors of requisite width should be appropriately located.
6. To prevent pilferage by employees, owners should spend more on security by employing more guards for extra vigil.
7. Width of exits/doors: 40 persons per minute can pass through an opening of 0.55 metres (22 inches).
8. Compartmentalisation: To allow workers to escape, fire and/or smoke should not spread between floors through open staircases, or from one end of a large floor to another.

### F. Factors responsible for deaths in garment factories:

1. Inadequate legislation and ineffective implementation
2. Improper building plan
3. Loophole in change in building use
4. Provision of single operational staircase
5. Lack of escape routes and hindrance of escape by congestion and sealed exits
6. Security measures driven to extremes, causing safety hazards
7. Improper waste disposal and lack of maintenance
8. Use of combustible materials for finish, furnishing and interior
9. Careless smoking habits
10. Improper use of heat appliances, in unventilated space
11. Improper installation/operation of electrical connections and equipment
12. Poor, or no maintenance, of electrical installations
13. Lack of emergency training and drill involving all employees, staff
14. Lack of adequate detection and alarm systems
15. Lack of appropriate notices, signs and sym-

16. Inaccessibility into and around buildings to fight fire
17. General lack of awareness regarding dangers of fire

### G. Accident follow-up

1. Once ignited, fire inside a garment factory may reach the unmanageable magnitude of an inferno because of the following reasons:
  2. Large single volume, not compartmentalised
  3. Excessive 'Fire Load' due to presence of highly combustible materials
  4. Assembly of people, ignorant about behaviour during a fire, who will panic because of no prior drill
  5. Movement of people in dark and concealed space in case of power cut
  6. Absence of, or inadequate, Means of Escape

The continuing saga of tragedy			
Date	Factory	Dead	Injured
8 Aug 2001	Europe, 4 Wings, Mico S, Mico G, Kafrul	21	100
26 Nov 2000	Chowdhury Apparels, Narsinghdi	48	
7 Aug 2000	Globe Knitting, Banani	12	
9 Jul 1999	Rose Knitting Factory, Gazipur	3	700
21 Nov 1997	Capital Fashions, Gulshan	2	7
13 Oct 1997	Jahanara Fashions, Mirpur	1	60
7 Sep 1997	Novelli Garments, Mohakhali	5	
30 Jul 1997	Sanghai Garments, Mirpur	23	100
15 Jul 1997	Rahman & Rahman, Maxborne, Top Stitch, Mirpur	9	50
24 Jun 1996	Trimot French & Suntex Garments	11	
5 Aug 1995	Lusaka Garments, Ibrahimpur	9	
11 Feb 1995	Prostor Garments, Mirpur, Dhaka	5	30
27 Dec 1990	Saraka Garments, Mirpur	27	
	Total	176	1,047

Source: Local newspapers in Dhaka

### H. More trouble in multi-storied garment factories:

1. Fire hazard intensifies in garment factories located in multi-storied buildings because of:
  2. Increased use of electrical and mechanical equipment
  3. Stack effect in ventilated tall buildings
  4. Spread of fire through external windows
  5. Increased difficulty to escape a fire
  6. Rescue operation becomes more arduous
  7. Spraying water becomes a major plumbing issue
8. Dual or multiple administration

### I. Fire-fighting hampered

1. Shrieking people in a state of panic will raise the alarm; however, efficient fire fighting will be hampered due to: No trained in-house personnel to take action and/or charge in case of fire or any other emergency
2. Lack, or absence, of fire fighting apparatus

3. Outdated, ill-maintained and inappropriate extinguishers
4. Trained personnel to operate extinguishers may not be available.
5. Lack of water in the vicinity

### J. Building Construction Rules 1996

1. Inadequate against fire  
Meagre and vague rules for fire prevention, protection and control. For instance, for buildings above 6 (six) stories it requires owners to:
  - a. install fire extinguishers with instructions on open places on each floor.
  - b. provide instructions for quick evacuation of the building with an alarm system
2. With regard to the Emergency Escape Route the Rules require that:
  - a. it should be within '25 metres' from any place
  - b. its lobby should be 'separated' from the lift lobby

3. It should be connected to the 'ground floor'

### K. Role of fire services

1. Fire Services should NOT be relied upon to save lives in case of fire.
2. Fire control design should NOT assume dependence on Fire Services.
3. Fire Services may be difficult to contact and therefore unavailable:
  - a. because its telephone number may not be known
  - b. because a telephone set may not be accessible
  - c. because the telephone system may be out of order
4. Fire engines may find it difficult:
  - a. to REACH a factory on fire in time through busy traffic
  - b. to LOCATE the address of an affected factory
6. Efficiency of the Fire Services may further be impeded by

should be laid on the following:

- a. Building design, addition and/or alteration: whether any change has been made to the building since it received planning permission, either structurally or with regards to organisation, finish materials, number of exits, size of exits, etc.
- b. Number of workers: whether number has increased
- c. General cleanliness: whether accumulation of rubbish can cause fire if ignited
- d. Functional hazard: whether process and use of any machinery can cause fire
- e. Smoking behaviour: whether 'No Smoking' sign is being strictly observed; whether smoking habits are increasing possibility of a fire
- f. New Work Materials: whether new materials (production/finish) have been included which might have an adverse effect on Fire Load
- g. Training of staff: whether staff has been trained to take charge during any emergency and to operate fire-fighting equipment; roster
- h. Fire Drill: whether drills are held at least twice a year in which all the workers and staff take part.
- i. Warning and alarm system: whether installed, operational and understood
- j. Fire fighting equipment: whether the condition of extinguisher, sprinkler system, hose reels, etc. meet safety requirements.
- k. Means of Escape: whether requisite number of doors/outlets are in operation for timely escape by all workers and staff; whether aisles, corridors, lounge, lobby and foyer are clear of any furniture, material, rubbish, etc.
- l. Assembly Point: whether a safe Assembly Point, sufficient to accommodate all the workers and staff, has been earmarked within safe distance from the factory; and so displayed.
- m. Fire Services: whether the telephone number of the Fire Services can be found in an emergency and whether the telephone system is reliable and accessible to the staff during any emergency.

### O. Conclusion

In order to ensure good fire safety practice every garment factory should take the following measures:

1. By design restrict the possibility of a fire
2. Take sufficient precautionary measures so that the possibility of a fire starting is minimised
3. Ensure by a properly designed Means of Escape that every individual (so drilled) can escape unaided to the open air/place of safety
4. Possess equipment and means of controlling a fire by trained personnel.

Photographs by Anisur Rahman and Dibyendu Saha Prince