



Ministry of Commerce & Industry
Government of India



CII
Confederation of Indian Industry



NATIONAL SEMINAR ON FIRE SAFETY IN TALL BUILDINGS

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BACKGROUND PAPER

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An abstract background featuring several 3D rectangular bars of varying heights and colors, including shades of light blue, green, and white, arranged in a cluster. The bars are rendered with soft shadows and gradients, giving them a three-dimensional appearance. The word "INTRODUCTION" is centered over this background.

INTRODUCTION

INTRODUCTION



Fire Safety in Tall Buildings is increasingly becoming a cause of major concern given the high incidence of loss of human life and property in case of fire. The challenges for safe evacuation of inhabitants of a building in case of fire are many. For tall buildings, providing time for people to reach safety requires unique considerations with regard to the potential for flame spread, challenges in fire suppression, the extended time occupants could be exposed to smoke and heat, and the potential for thermal weakening of the building structure.

Fire safety of occupants is a fundamental requirement that owners of tall buildings and professionals involved in their design, construction and operation endeavor to achieve. Thus a network of fire safety-related interrelationships between structural fire protection, architectural layout, mechanical, HVACR and plumbing systems, fire suppression systems, electrical features, and fire alarm, detection and control systems is a critical one.

The vulnerability of tall buildings to fire increases due to lack of general awareness on what might pose a fire hazard. Some common fire hazards generally ignored by occupants of buildings include blocked cooling vents, overloaded electrical systems, fuel storage areas with high oxygen concentration or insufficient protection (such as DG Set Rooms), objects that block fire exits, combustibles near or around the clothes dryer, incorrectly installed wiring, misuse of electrical appliances, lit candles left unattended, improperly-extinguished tobacco, failure to clean and maintain the clothes dryers exhaust duct.

Over the years a number of techniques, methods and fire safety standards have evolved to ensure safe evacuation of occupants and minimize loss of property. These fire protection measures are based on the characteristic of construction material and structural elements of buildings. Activities pursued by the occupants of a building also become an important consideration for assessing the extent of hazards, and the fire safety and precautions should be devised to deal with such issues.

Builders are also expected to follow a fire safety policy which must ensure that the building is constructed in accordance with the version of the local building code. Further they are expected to maintain a facility and conduct themselves in accordance with the provisions of the fire code. Implementation of the Fire Safety Code requires that the occupants and operators of a building are aware of the applicable regulations and advice such as:

- Not exceeding the maximum occupancy within any part of the building.
- Maintaining proper fire exits and proper exit signage (e.g., exit signs pointing to them that can function in a power failure)
- Placing and maintaining fire extinguishers in easily accessible places.
- Properly storing/using, hazardous materials that may be needed inside the building for storage or operational requirements (such as solvents in spray booths).
- Prohibiting flammable materials in certain areas of the facility.
- Periodically inspecting buildings for violations, issuing Orders to Comply and, potentially, prosecuting or closing buildings that are not in compliance, until the deficiencies are corrected or condemning it in extreme cases.
- Maintaining fire alarm systems for detection and warning of fire.
- Obtaining and maintaining a complete inventory of fire stops.
- Ensuring that spray fireproofing remains undamaged.
- Maintaining a high level of training and awareness of occupants and users of the building to avoid obvious mistakes, such as the propping open of fire doors.
- Conduct fire drills at regular intervals throughout the year

Implementation of codes, installation & design principles, and maintenance & urban engineering strategies is thus the key to assuring safety in buildings.

In this context, Confederation of Indian Industry, along with their partners American National Standards Institute and Bureau of Indian Standards have organized the National Seminar on Fire Safety in Tall Buildings under the India US Standards Conformance and Cooperation Programme. In addition to contributing to public health and safety, this seminar will also provide opportunities for industry to build capacity & capability.

It will provide a forum for sharing best practices for developing product standards and safety codes through a constructive dialogue amongst technical experts from the U.S. and India.

FIRE PROTECTION REQUIREMENTS TALL BUILDINGS 15 M IN HEIGHT OR ABOVE.



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FIRE CODE

Fire code (Fire prevention code or Fire safety code) is a model code adopted by the state or local jurisdiction and enforced by fire prevention officers within municipal fire departments. It is a set of rules prescribing minimum requirements to prevent fire and explosion hazards arising from storage, handling, or use of dangerous materials, or from other specific hazardous conditions. It complements the building code. The fire code is aimed primarily at preventing fires, ensuring that necessary training and equipment will be on hand, and that the original design basis of the building, including the basic plan set out by the architect, is not compromised. The fire code also addresses inspection and maintenance requirements of various fire protection equipment in order to maintain optimal active fire protection and passive fire protection measures.



C-O General

In addition to the general provisions given in this part, the Authority may insist on suitable protection measures (see C-I to C-II) in a building 15m in height or above

C-1 Construction:

C-1.1. All materials of construction in load bearing elements, stairways, corridors and facades shall be non-combustible.

C-1.2. The interior finish materials shall not have a flame spreadability rating exceeding class 1 (see 3.4.15.2).

C-1.3. The internal wall of staircase shall be of brick or reinforced concrete with a

minimum of 2hr. fire rating.

C-1.4. The staircase shall be ventilated to the atmosphere at each landing with a vent at the top; the vent opening shall be of 0.5 m² in the external wall and the top. If the staircase cannot be ventilated, because of location or other reasons, a positive pressure 50Pa shall be maintained inside. The mechanism for pressurising the staircase shall operate automatically with the fire alarm. The roof of the shaft shall be 1 m above the surrounding roof. **Glazing or glass bricks if used in staircase shall have fire resistance rating of minimum 2 hours.**

C-1 .5. Lifts



General requirements of lift shall be as follows:

- (a) Walls of lift shaft enclosures shall have a fire rating of 2 hrs. Lift shafts shall have a vent at the top, of area not less than 0.2 m²;
- (b) Lift motor room shall be located preferably at the top of the shaft and separated from the shaft by the floor of the room;
- (c) Landing doors in lift enclosures shall have fire resistance of not less than 1 h;
- (d) The number of lifts in one row for a lift bank shall not exceed 4 and the total number of lifts in the bank shall not exceed 8.**

A wall of 2 h. rating shall separate individual shafts in a bank.

- (e) Lift car door shall have a fire resistance rating of half an hour;
- (f) Collapsible gates shall not be permitted for lifts.

They shall have solid doors with fire resistance of at least 1h.

- (g) If the lift shaft and lobby is in the core of the building, a positive pressure between 25 and 30 Pa shall be maintained in the lobby, and a positive pressure of 50 Pa

shall be maintained in the shaft. The mechanism for pressurisation shall act automatically with the fire alarm; it shall be possible to operate this mechanically also;

- (h) Exit from the lift lobby, if located in the core of the building, shall be through a self-closing smoke stop door of half an hour fire resistance;
- (i) Lifts shall not normally communicate with the basement; if, however, lifts are in communication, the lift lobby of the basements shall be pressurised as in (g), with self closing door as in (h);
- (k) Grounding switch (es), at ground floor level, shall be provided on all the lifts to enable the fire service to ground the lifts;
- (m) Telephone or other communication facilities shall be provided in lift cars for buildings of 30m in height and above. Communication system for lifts shall be connected to fire control room for the building;
- (n) Suitable arrangements such as providing slope in the floor of lift lobby, shall be made to prevent water used during fire fighting etc, from entering the lift shafts;
- (p) A sign shall be posted and maintained on every floor at or near the lift indicating that in case of fire, occupants shall use the stairs unless instructed otherwise. The sign shall also contain a plan for each floor showing the locations of the stairways. Alternate source of power supply shall be provided for all the lifts through a manually operated changeover switch.

(q) **Fire Lifts**

Following details shall apply for a fire lift:

- (i) To enable fire services personnel to reach the upper floors with the minimum delay, one fire lift per 1200 m² of floor area shall be provided, and shall be available for the exclusive use of the firemen in an emergency;
- (ii) The lift shall have a floor area of not less than 1.4 m², It shall have loading capacity

of not less than 545 kg (8 persons lift) with automatic closing doors of minimum 0.8 m width;

- (iii) The electric supply shall be on a separate service from electric supply mains in a building and the cables run in a route safe from fire, that is, within the lift shaft. Lights and fans in the elevators having wooden paneling or sheet steel construction shall be operated on 24 volt supply;
- (iv) Fire lift should be provided with a ceiling hatch for use in case of emergency, so that when the car gets stuck up, it shall be easily open able;
- (v) In case of failure of normal electric supply, it shall automatically changeover to alternate supply. For apartment houses, this changeover of supply could be done through manually operated changeover switch. Alternatively, the lift shall be so wired that in case of power failure, it comes down at the ground level and comes to standstill with door open.
- (vi) The operation of fire lift should be by a simple toggle or two -button switch situated in glass-fronted box adjacent to the lift at the entrance level. When the switch is on, landing call points will become inoperative and the lift will be on car control only or on a priority control device. When the switch is off, the lift will return to normal working, when this lift can be used by the occupants in normal times.
- (viii) The words 'Fire Lift' shall be conspicuously displayed in fluorescent paint on the lift landing doors at each floor level.
- (ix) The speed of the fire lift shall be such that it can reach the top floor from ground level within one minute.

C-1.6 Basements

C-1.6.1. Each basement shall be separately ventilated.

Vents with cross sectional area (aggregate) not less than 2.5 % of the floor area spread evenly around the perimeter of the basement shall be provided in the

form of grills, breakable stall board lights, pavement lights or by way of shafts. Alternatively, a system of air inlets shall be provided at basement floor level and smoke outlets at basement ceiling level. Inlets and extracts shall be terminated at ground level with stallboard or pavement lights as before, but ducts to convey fresh air to the basement floor level will have to be laid. Stallboard and pavement lights should be in positions easily accessible to the fire brigade and clearly marked '**SMOKE OUTLET**' OR '**AIR INLET**' with an indication of areas served at or near the opening.

C-1.6.2. The staircase of basements shall be of enclosed type having fire resistance of not less than 2 hours and shall be situated at the periphery of the basement to be entered at ground level only from the open air and in such positions that smoke from any fire in the basement shall not obstruct any exit serving the ground and upper storey's of the building. It shall communicate with basement through a lobby provided with fire resisting self closing doors of one hour resistance. For travel distance refer 4.5. If the travel distance exceeds as given in Table 21, additional staircases shall be provided at proper places.

C-1.6.3. In multistorey basements, intake ducts may serve all basement levels, but each basement level and basement compartment shall have separate smoke outlet duct or ducts. **Ducts so provided shall have the same fire resistance rating as the compartment itself. Fire rating may be taken as the required smoke extraction time for smoke extraction ducts.**

C-1.6.4. Mechanical extractors for smoke venting system from lower basement levels shall also be provided, the system shall be of such design as to operate on actuation of heat/smoke sensitive detectors or sprinklers, if installed, and shall have a considerably superior performance compared to the standard units. It shall also have an arrangement to start it manually.

C-1.6.4.1. Mechanical extractors shall have an internal locking arrangement, so that extractors shall continue to operate and supply fans shall stop automatically with

the actuation of fire detectors.

C-1.6.4.2. Mechanical extractors shall be designed to permit 30 air changes per hour in case of fire or distress call. However, for normal operation, air changes schedule shall be as given in 3.4.11.5.

C-1.6.4.3. Mechanical extractors shall have an alternative source of supply;

C-1.6.4.4 Ventilating ducts shall be integrated with the structure and made out of brick masonry or reinforced cement concrete as far as possible, and when this duct crosses the transformer area or electrical switchboard, fire dampers shall be provided.

C-1.6.5. Use of basements for kitchen working on gas fuel shall not be permitted unless air- conditioned.

The basement shall not be permitted below the ward block of a hospital/nursing home unless it is fully sprinkled. Building services such as electrical substations, boiler rooms in basements shall comply with the provisions of I.E. Act/ Rules.

C-1.6.6 If cut-outs are provided from basements to the upper floors or to the atmospheres, all sides of cut out openings in the basements shall be protected by sprinkler heads at close spacing so as to form a water curtain in the event of a fire.

C-1.7. Operable windows on external walls shall be fitted with such locks that can be opened by a fireman's axe.

C-1.8. All floors shall be compartmented with area not exceeding 750 m² by a separation wall with 2 h fire rating. For floors with sprinklers the area may be increased by 50 percent. In long building, the fire separation walls shall be at distances not exceeding 40 m. For departmental stores, shopping centers and basements, the area may be reduced to 500 m² for compartmentation.

Where this is not possible, the spacing of the sprinklers shall be suitably reduced. When reducing the spacing of sprinklers, care should be taken to prevent spray from one sprinkler impeding the performance of an adjacent sprinkler head

C-1.8.1. It is essential to make provisions for drainage of any such water from all floors to prevent or minimise water damage of the contents. The drain pipes should be provided on the external wall for drainage of water from all floors. On large area floors several such pipes may be necessary which should be spaced 30 m apart. Care shall be taken to ensure that the construction of the drain pipe does not allow spread of fire/smoke from floor to floor.

C1.9. **Service Ducts/Shafts.**

- (a) Service ducts and shafts shall be enclosed by walls of 2 h, and doors of 1 h, fire rating. All such ducts/shafts shall be property sealed and fire stopped at all floor levels.
- (b) A vent opening at the top of the service shaft shall be provided having between one-fourth and one-half of the area of the shaft.

C-1.10 **Refuse chutes** shall have opening at least 1 m above roof level for venting purpose and they shall have an enclosure wall of non-combustible material with fire resistance of not less than 2 hours. They shall not be located within the staircase enclosure or service shafts, or air-conditioning shafts. Inspection panel and doors shall be tight fitting with 1 hr fire resistance; the chutes should be as far away as possible from exits.

C-1.11 **Refuge Area**

Provisions contained in 4.12.3 shall apply for all high- rise buildings except multi-family dwellings where refuge area of not less than 15 m² shall be provided on external walls

C-1.12. Electrical services shall conform to the following:

- (a) The electric distribution cable/wiring shall be laid in a separate duct. The duct shall be sealed at every floor with non-combustible materials having the same fire resistance as that of the duct. Low and medium voltage wiring running in shaft and in false ceiling shall run in separate conduits.
- (b) Water mains, telephone lines, intercom lines, gas pipes or any other service line shall not be laid in the duct for electrical cables; use of bus ducts/ solid rising mains instead of cables is preferred.
- (c) Separate circuits for fire fighting pumps, lifts, staircases, corridor lighting and blowers for pressurising system shall be provided directly from the main switch gear panel and these circuits shall be laid in separate conduit pipes, so that fire in one circuit will not affect the others. Such circuits shall be protecting at origin in an automatic circuit breaker with its no-volt coil removed. Master switches controlling essential service circuits shall be clearly labeled.
- (d) The inspection panel doors and any other opening in the shaft shall be provided with air tight fire doors having fire resistance of not less than 1 h.
- (e) Medium and low voltage wiring running in shafts and within false ceiling shall run in metal conduit. Any 230 V wiring for lighting or other services, above false ceiling, shall have 660 V grade insulation. The false ceiling, including all fixtures used for its suspension, shall be of non-combustible material and shall provide adequate fire resistant to the ceiling in order to prevent spread of fire across ceiling, reference may be made to good practice [F(29)];
- (f) An independent and well ventilated electrical service room shall be provided on the ground level or first basement with direct access from outside or from the corridor for the purpose of termination of electric supply from the licensees* service and alternative supply cables. The doors provided for the service room shall have fire resistance of not less than 2 hours.

Note: If service room is located at the first basement, it should have automatic fire extinguishing system.

(g) If the licensees agree to provide meters on upper floors, the licensees' cables shall be segregated from consumers' cables by providing a partition in the duct. Meter rooms on upper floors shall not open into staircase enclosures and shall be ventilated directly to open air outside; and

(h) Suitable circuit breakers shall be provided at the appropriate points.

C-1.13 Gas **supply** shall conform to the following:

(a) Town gas/ L.P.Gas supply pipes - Where gas pipes are run in buildings, the same shall be run in separate shafts exclusively for this purpose and these shall be on external walls, away from the staircases. There shall no interconnection of this shaft with the rest of the floors, LPG distribution pipes shall always be below the false ceiling. The length of these pipes shall be as short as possible. In the case of kitchen cooking range area, apart from providing hood, covering the entire cooking range the exhaust system should be designed to take care of 30 m^3 per minute per m^2 of hood protected area. It should have grease filters using metallic grill to trap oil vapours escaping into the fume hood.

Note - For detailed information on gas pipe installations, reference may be made to Part 9 Plumbing Services, Section 3 Gas supply.

(b) All wiring in fume hoods shall be of fiber glass insulation. Thermal detectors shall be installed into fume hoods of large kitchens for hotel, hospitals, and similar areas located in high- rise buildings. Arrangements shall be made for automatic tripping of the exhaust fan in case of fire. If LPG is used, it shall be shut off. The voltage shall be 24 vor 100 v dc operated with external rectifier. The valve shall be of the hand re-set type and shall be easily accessible. The hood shall have manual facility for steam or carbon dioxide gas injection, depending on duty condition;

- (C) Gas meters shall be housed in a suitably constructed metal cupboard located in a well ventilated space, keeping in view the fact that LPG is heavier than air and town gas is lighter than air.

C-1.14 Illumination of Means of Exit

Staircase and corridor lights shall conform to the following (see 4.16 and 4.17 for additional details):

- (a) The staircase and corridor lighting shall be on separate circuits and shall be independently connected so that it could be operated by one switch installation on the ground floor easily accessible to fire fighting staff at any time irrespective of the position of the individual control of the light points, if any. It should be of miniature circuit breaker type of switch so as to avoid replacement of fuse in case of crisis;
- (b) Staircase and corridor lighting shall also be connected to alternative supply. The alternative source of supply may be provided by battery continuously trickle charged from the electric mains:
- (c) Suitable arrangements shall be made by installing double throw switches to ensure that the lighting installed in the staircase and the corridor does not get connected to two sources of supply continuously. Double throw switch shall be installed in the service room for terminating the stand-by supply.
- (d) Emergency lights shall be provided in the staircase and corridor.
- (e) All wires and other accessories used for emergency light shall have fire retardant property

C-1.15 A stand-by electric generator shall be installed to supply power to staircase and corridor lighting circuits, fire lifts, the stand-by fire pump, pressurisation fans and blowers, smoke extraction and damper systems in case of failure of normal electric supply. The generator shall be capable of taking starting current of all the machines and circuits stated above simultaneously. If the stand-by pump is

driven by diesel engine, the generator supply need not be connected to the main electrical pump. Where parallel HV/LV supply from a separate sub-station is provided with appropriate transformer for emergency, the provision of generator may be waived in consultation with the Authority.

C-1.16 Transformers shall conform to the following:

- (a) A sub-station or a switch-station with oil filled equipment shall not be located in the building. The substation structure shall have separate fire resisting walls/surroundings and shall necessarily be located at the periphery of the floor having separate access from fire escape staircase. The outside walls, ceiling, floor, openings including doors and windows to the substation area shall be provided with a fire resisting door of 2hr. fire rating. Direct access to the transformer room shall be provided, preferably from outside the fire escape staircase.
- (b) The substation area needs to be maintained at negative air pressure and area in substation shall not be used as storage / dump areas.
- (c) When housed inside the building, the transformer shall be of dry type and shall be cut off from the other portion of premises by walls / doors / cut out having fire resistance rating of 4 hrs.

C-1.17 Air-conditioning shall conform to the following: (a) Escape routes like staircases, common corridors, lift lobbies, etc, shall not be used as return air passage;

- (b) The ducting shall be constructed of substantial gauge metal in accordance with good practice [F(30)];
- (c) Wherever the ducts pass through fire walls or floors, opening around the ducts shall be sealed with materials having fire resistance rating of the compartment;
- (d) Where duct crosses a compartment which is fire rated, the ducts shall be fire rated for same fire rating. Further depending upon services passing around the duct work, which may get affected in case of fire temperature rising the ducts shall be

insulated;

- (e) As far as possible metallic ducts shall be used even for the return air instead of space above the false ceiling;
- (f) Where plenum is used for return air passage, ceiling and its fixtures shall be of non-combustible material;
- (g) The materials used for insulating the duct system (inside or outside) shall be of non-combustible materials. Glass wool shall not be wrapped or secured by any material of combustible nature;
- (h) Areas more than 750 m² on individual floor shall be segregated by a fire wall and automatic fire dampers for isolation shall be provided [see (s)];
- (i) Air ducts serving main floor areas, corridors, etc, shall not pass through the staircase enclosure;
- (j) The air-handling units shall be separate for each floor and air ducts for every floor shall be separated and in no way inter-connected with the ducting of any other floor;
- (k) If the air-handling unit serves more than one floor, the recommendations given above shall be complied with in addition to the conditions given below;
 - (1) Proper arrangements by way of automatic fire dampers working on smoke detector/or fusible link for isolating all ducting at every floor from the main riser shall be made;
 - (2) When the automatic fire alarm operates, the respective air-handling units of the air-conditioning system shall automatically be switched off.

NOTE-Fusible link operates on heat detection system. (m) The vertical shaft for treated fresh air shall be of masonry construction;

(n) The air filters of the air-handling units shall be of non-combustible materials;

(p) The air handling unit rooms shall not be used for storage of any combustible materials;

(q) Inspection panels shall be provided in the main trunking to facilitate the cleaning of ducts of accumulated dust and to obtain access for maintenance of fire dampers;

r No combustible material shall be fixed nearer than

150 mm of any duct unless such duct is properly enclosed and protected with non-combustible material (glass wool or spun glass with neoprene facing enclosed and wrapped with aluminum sheeting) at least 3.2 mm thick which would not readily conduct heat;

(s) Fire Dampers:

1) These shall be located in conditioned air ducts and return air ducts/passages at the following points:

(i) At the fire separation wall;

(ii) Where ducts/passages enter the central vertical shaft;

(iii) Where the ducts pass through floors, and;

(iv) At the inlet of supply air duct and the return air duct of each compartment on every floor;

(2) The dampers shall operate automatically and shall simultaneously switch off the air-handling fans. Manual operation facilities shall also be provided.

Note-For blowers, where extraction system and duct accumulators are used, dampers shall be provided.

(3) Fire/smoke dampers (for smoke extraction shafts) for buildings more than 24 m in height:

For apartment houses -In non-ventilated lobbies / corridors operated by fusible link / smoke detectors with manual control.

For other buildings-On operation of smoke detection system and with manual control.

- 4) Automatic fire dampers shall be so arranged as to close by gravity in the direction of air movement and to remain tightly closed on operation of a fusible link / smoke detector.

C-1.18. Provisions of boiler and boiler rooms shall conform to Indian Boiler Act. Further, the following additional aspects may be taken into account for the location of boiler room;

- (a) The boilers shall not be allowed in sub basement, but may be allowed in the basements away from escape routes;
- (b) The boilers shall be installed in a fire resisting room of 4h fire resistance rating, and this room shall be situated on the periphery of the basement. Catch- pits shall be provided at the low level;
- (c) Entry to this room shall be provided with a composite door of 2h fire resistance;
- (d) The boiler room shall be provided with fresh air inlets and smoke exhausts directly to the atmosphere;
- (e) The furnace oil tank for the boiler, if located in the adjoining room, shall be separated by fire resistant wall of 4h rating. The entrance to this room shall be provided with double composite doors. A curb of suitable height shall be provided at the entrance in order to prevent the flow of oil into the boiler room in case of tank rupture.
- (f) Foam inlets shall be provided on the external walls of the building near the ground level to enable the fire services to use foam in case of fire.

C-2. Provision of first aid fire fighting appliances:

The first aid fire fighting equipment shall be provided on all floors, including basements, Lift rooms etc, in accordance with good practice [F (20)] in consultation with the authority

C-3. Fire Alarm System:

C-3.1. All buildings with height of 15m or above shall be equipped with manually operated electrical fire alarm (MOEFA) system and automatic fire alarm system in accordance with good practice [F(17)] and [F (18)]. However, apartment building between 15m and 30 m height may be exempted from the installation of the automatic fire alarm system provided the local fire brigade is suitably equipped for dealing with fire in a building of 15 m in height or above, and in the opinion of the authority, such building does not constitute a hazard to the safety of the adjacent property or occupants of the building itself.



C-3.1.1 Manually operated electrical fire alarm system shall be installed in the building with one or more call boxes located at each floor. The call boxes shall conform to good practice [F (18)] and [F (19)]

C-3.1.2 The installation of call boxes in hostels and such other places where these are likely to be misused shall be avoided. Location of all boxes in dwelling units shall preferably be inside the building.

C-4 Lightning protection of buildings.

The lightning protection of buildings shall be provided as given in Part 8 Building services, section 2 Electrical Installations.

C-5 Fire Control Room.

For all buildings 15m in height and above and apartment buildings with a height of 30m and above, there shall be a Control Room on the entrance floor of the building with communication system (suitable public address system) to all floors and facilities for receiving the message from different floors. Details of all floor plans along with the details of fire fighting equipment and installations shall be displayed in the fire control room. The fire control room shall also have facilities to detect the fire on any floor through indicator boards connection; fire detection and alarm systems on all floors. The fire staff in charge of the fire control room shall be responsible for maintenance of the various services and the fire fighting equipment and installations in coordination with security, electrical and civil staff of the building.

C-6 Fire Officer for Hotels, Business and Mercantile Buildings with height more than 30m.

C-6.1 Aqualified fire officer with experience of not less than 3 years shall be appointed who will be available on the premises.

C-6.2. The fire officer shall,

- (a) Maintain the fire fighting equipment in good working condition at all times
- (b) Prepare fire orders and fire operational plans and get them promulgated,
- (c) Impart regular training to occupants of the buildings

In the use of fire fighting equipments provided on the premises, and keep them informed about the fire emergency evacuation plan,

- (d) Keep proper liaison with city fire brigade, and (e) Ensure that all fire precautionary measures are observed at all times.

Note: Competent authority having jurisdiction may insist on compliance of the above rules in case of buildings having very large areas even if the height is less than

30m.

C-7. Housekeeping

To eliminate fire hazards, good house keeping, both inside and outside the building, shall be strictly maintained by the occupants and the owner of the building.

C-8. Fire drills and fire orders:

Fire notices/ orders shall be prepared to fulfill the requirements of fire fighting and evacuation from the buildings in the event of emergency. The occupants shall be made thoroughly conversant with their actions in the event of emergency by displaying fire notices at vantage points and also through regular training. Such notices should be displayed prominently in broad lettering.

For guidelines for fire drills and evacuation procedures for high rise building, see Annex E.

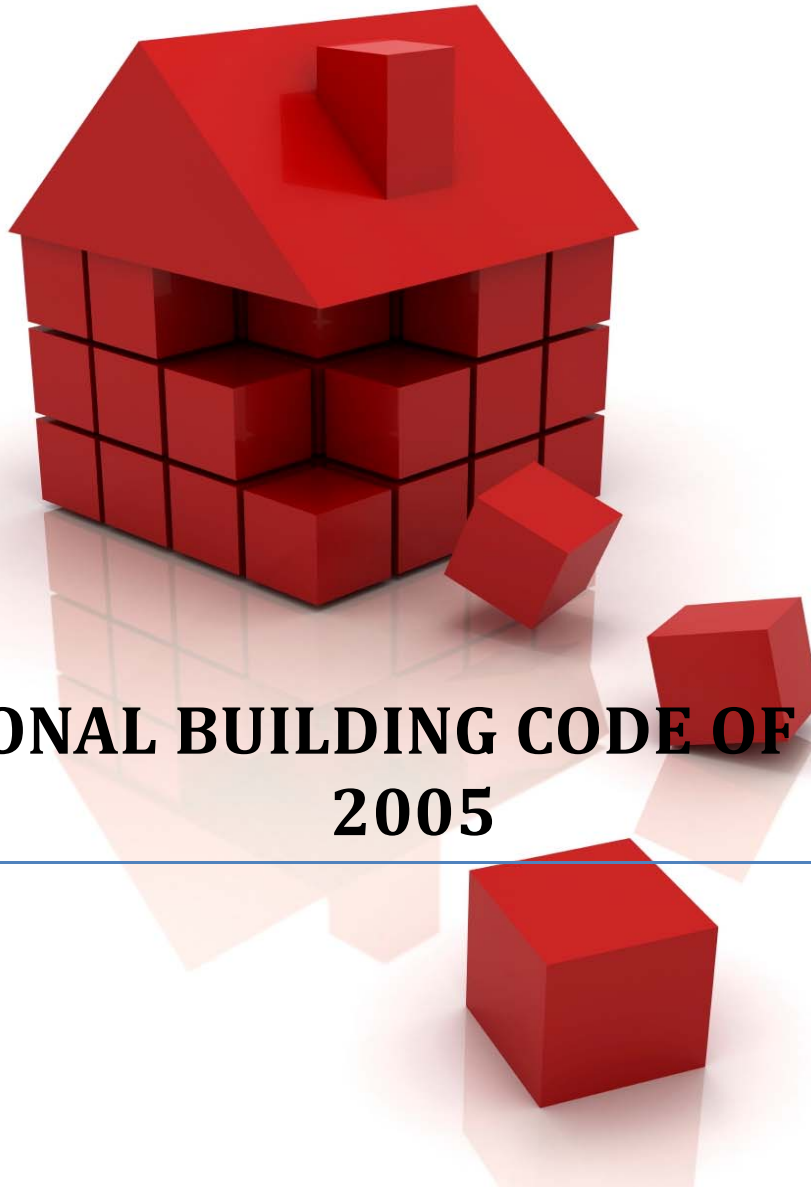
C-9. Compartmentation: The building shall be suitably compartmentalised so that fire/ smoke remains confined to the area where fire incident has occurred and does not spread to the remaining part of the building

C-10 Helipad:



For high rise buildings above 60 m in height, provision for helipad should be made.

C-11. Materials for Interior Decoration/Furnishing: The use of materials which are combustible in nature and may spread toxic fume/gases should not be used for interior decoration/furnishing etc. modern production methods.



NATIONAL BUILDING CODE OF INDIA 2005

NATIONAL BUILDING CODE OF INDIA 2005

Part 4 Fire and Life Safety

This part of NBC 2005 deals with safety from fire. It specifies the demarcation of fire zones, restrictions on construction of buildings in each fire zone, classification of buildings based on occupancy, types of building construction according to fire resistance of the structural and non-structural components and other restrictions and requirements necessary to minimize danger to life from fire, smoke, fumes or panic before the buildings can be evacuated. The code recognizes that safety of life is more than a matter of means of exits and accordingly deals with various matters which are considered essential to the safety of life.

Fire protection techniques have to be based on the fire behaviour characteristics of different materials and structural elements of buildings. The activities pursued by the occupants of buildings must also be taken into consideration for assessing the extent of hazards, and method should then be devised by which the hazards could be minimized. An indefinite combination of variables is involved in the phenomenon of fire, all of which cannot be quantified. The requirements of this Code should, therefore, be taken as a guide and an engineering design approach should be adopted for ensuring a fire safe design for buildings. It would also be necessary for this purpose to associate qualified and trained fire protection engineers with the planning of buildings, so that adequate fire protection measures could be incorporated in the building design right from the beginning.

Absolute safety from fire is not attainable in practice. The objective of this part is to specify measures that will provide that degree of safety from fire which can be reasonably achieved. The Code endeavours to avoid requirements that might involve unreasonable hardships or unnecessary inconvenience or interference with normal use and occupancy of buildings, but insists upon compliance with minimum standards for fire safety necessary in public interest. For ensuring compliance of fire protection

equipments/installations to the laid down quality requirements, it is desirable to use such equipments/installation duly certified under the BIS Certification Marks Scheme.

While providing guidelines for minimizing chances of occurrence of fire through passive fire protection measures, this part does not intend to cover all aspects of general fire prevention including sources of ignition. Nor does it cover the prevention of accidental personal injuries during the course of normal occupancy of buildings.

This part while recognizing that panic in a building on fire may be uncontrollable, deals with the potential panic hazard through measures designed to prevent the development of panic. Experience indicates that panic seldom develops even in the presence of potential danger, so long as occupants of buildings are moving towards exits which they can see within a reasonable distance and with no obstruction or undue congestion in the path of travel. However, any uncertainty as to the location or adequacy of means of egress, the presence of smoke or fumes and the stoppage of travel towards the exit, such as may occur when one person stumbles and falls on stairs, may be conducive to panic. Danger from panic is greater when a large number of people are trapped in a confined area.

Experience has shown that concealed spaces within a building such as space between ceiling and false ceiling, horizontal and vertical ducts, etc, tend to act as flues/tunnels during a fire. Provision should, therefore, be made to provide fire stopping within such spaces.

Nothing in this part of the Code shall be construed to prohibit better types of building construction, more exits or otherwise safer conditions than the minimum requirements specified in this part.

Compliance with this part shall not be construed as eliminating or reducing the necessity for other provisions for safety of persons using a building or structure under

normal occupancy conditions. Nor shall any provision of this Code be construed as requiring or permitting any addition that may be hazardous under normal occupancy conditions.

One of the major points brought out in this part is the limitation of heights and areas of buildings based on fire safety of the occupants. Individual municipal corporations are free to alter Table 19 based on local conditions, but the ratios of areas as maintained in the table for different occupancies and types of construction shall be adhered to.

Advantage has been taken of the developments, particularly in fire resistance rating of materials, designating types of construction in a rational manner and relating the area limitations of different occupancies to different types of construction.

Halons (halogenated hydrocarbons) which exhibit exceptional fire fighting and explosion prevention/suppression characteristics have been found to possess high ozone depleting potential. They come under Group II of Annex A of the Montreal Protocol on Substances that Deplete the Ozone Layer, the international environmental agreement for phasing out ozone depleting substances. Due to increasing evidence that the ozone layer is getting depleted at a faster rate than thought earlier, the developed countries accelerated their phase-out schedule with a view to achieving 100 percent phase-out of halons by 1 January 1994, instead of the earlier target date of 1 January 2000 after which only essential use of halon was allowed.

For developing countries like India, the total phase-out of halons is to be achieved by 1 January 2010, as per Montreal Protocol, unless a decision is taken in between to hasten up the phase-out of ozone depleting substances. India, having become a signatory to the Protocol in June 1992, is committed to abide by the Montreal Protocol decisions. In accordance with Ministry of Environment and Forests, Government of India, Ozone Depleting Substances (Regulations), Rules, 2000, the manufacture of

halon based fire extinguishers and extinguishing systems has been phased out by 1 January 2001.

Meanwhile, the practical implications of the phasing out of the halons cover, by and large, the following aspects:

- a) Availability of halons will be restricted;
- b) Non-standard halon extinguishers, like aerosol type, shall not be permitted;
- c) Discharge of halons for training/testing, etc shall not be permitted;
- d) All efforts shall be made for avoiding/minimizing halon emissions at various levels such as production, fire equipment manufacture, use, service and maintenance;
- e) Since `drop-in' substitutes for halons are not likely to be available on a commercial scale in the near future, wherever possible, instead of halon, use of suitable alternative extinguishing media/methods will be resorted to, even accepting some trade-offs, if necessary; and
- f) Halons shall be restricted for `essential uses' only, for protection of critical fire explosion risk areas which would otherwise result in serious impairment of an essential service to society, or pose an unacceptable threat to life, the environment, or national security.

NOTE - Detailed instructions which will be issued by the Government of India from time to time for implementation of the Country Programme for the phasing out of ozone depleting substance (ODS) and regarding permitting use of halons for applications till the availability of proper substitutes shall have to be complied with.

The first version of this part was formulated in 1970 and first revision was brought out in 1983. Subsequently the first revision of this part was modified in 1997 through Amendment No. 3 to 1983 version of the Code. This modified version of this part included few tables for the fire resistance ratings of various building components such as walls, columns, beams and floors. The requirements for wet riser, down-comer, automatic sprinkler installation, high velocity (10-15 m/s) water spray or foam

generating system, etc, for buildings were modified. Annex giving guidelines for selection of fire detectors had been deleted and relevant Indian Standards on fire alarm system and smoke detectors had been referred. Also, Annex for determination of fire loads and fire load density for arriving at the classification of occupancy hazard and calorific values of some common materials were included. Annex for broad classification of industrial and non-industrial occupancies into low, moderate and high hazard had also been included.

As a result of implementation of this part, some useful suggestions have emerged. This revision of NBC 2005: Part 4 has, therefore, been brought out to take care of the same. The significant modifications incorporated include:

- a) The text has now been divided into the following broad clauses:
 - 1) *Fire Prevention* – covering aspects of fire prevention pertaining to design and construction of buildings on passive fire protection measures, also describing the various types of building materials and their fire rating.
 - 2) *Life Safety* – covering life safety provisions in the event of fire and similar emergencies, also addressing construction and occupancy features that are necessary to minimize danger to life from fire, smoke, fumes or panic.
 - 3) *Fire Protection* – covering the significant appurtenances and their related components and guidelines for selecting the correct type of equipment and installation meant for fire protection of the building, depending upon the classification and type of the building.

- b) The classification of building based on occupancy has been elaborated, with:

- 1) Starred hotels now covered as a new subdivision A-6 under occupancy Group A Residential.
- 2) Heritage structures and archeological monuments now covered under subdivision D-3 occupancy Group D Assembly buildings.
- 3) Mixed assembly occupancies now covered as a new subdivision D-6 and under ground elevated railways have been covered as a new subdivision D-7 under occupancy Group D Assembly buildings
- 4) TV stations now covered under subdivision E-5 of occupancy Group E Business buildings.
- 5)
 - c) The minimum capacity of smoke exhaust equipment has been increased to 12 air changes per hour.
 - d) For the external stairs for exit requirements, the width and treads have been increased to 1 250 mm and 250 mm respectively.
 - e) Under the requirements for institutional buildings the clear width of all required exits which serve as egress from hospital or infirmary section has been increased from 1.5 m to 2 m. Also, provision of patient-lift has been included.
 - f) Due cognizance of halon phase out programme has been taken, while specifying provisions in this draft with respect to fire protection using fire extinguishers/systems.

Apart from the provisions of Fire Prevention, Life Safety and Fire Protection for various building occupancy types, this Part 4 of NBC 2005 covers

- a) Additional occupancy wise requirements
- b) Calorific values of common materials and typical values of fire load density
- c) Broad classification of industrial and non-industrial occupancies into different degree of hazard

- d) Fire protection requirements for high rise buildings (height 15 m or above)
- e) Fire protection considerations for venting in industrial buildings
- f) Guidelines for fire drill and evacuation procedures for high rise buildings



A REPORT
ON
STANDARDS & CONFORMANCE
COOPERATION PROGRAMME

SCCP - STANDARDS AND CONFORMANCE COOPERATION PROGRAMME (JANUARY 2009 – MARCH 2011)

Launched on 20 February 2009 in India and on 2 March 2009 in US

“The International Language of Commerce is Standards”

Standardisation has become the playing field on which competitors meet in the race to succeed in domestic and global markets. The U.S.-India Standards and Conformance Cooperation Program (SCCP) is a comprehensive initiative designed to facilitate interaction and engagement between representatives from industry and government in the United States and India. It is carried out with funding from the United States Trade and Development Agency (USTDA) by ANSI and the Indian grantee, the Confederation of Indian Industry (CII), in close cooperation with the Bureau of Indian Standards (BIS).

FEATURES

- To monitor progress towards the ultimate goal of facilitating Indo-U.S. trade.
- To track specific standards and conformance related issues raised by stakeholders in the U.S. and India,
- To provide information on steps being taken to address Individuals, companies, or organisations towards newer issues.
- The programme is aimed to improve access for Indian companies in the US market and vice versa by boosting cooperation on standards and conformance issues.
- The program is expected to provide participants with an opportunity to become involved and increase individual engagement with the US and Indian stakeholders.

CURRENT STATUS OF THE STANDARDS AND CONFORMANCE PROGRAMME

1. INDIA LAUNCH OF SCCP PROGRAMME : 20 February 2009 in New Delhi

Key Participants in the launch:

- US Trade Development Authority,
- American National Standards Institute,
- Bureau of Indian Standards
- Confederation of Indian Industry,
- Quality Council of India,
- Indian Industry



Mr Bhaskar Bhat, Chairman, CII National Committee on Gems & Jewelry and MD, Titan Industries opening the "Industry Roundtable" organized during the Indo-USA Standards & Conformance Cooperation program Launch in Delhi.

L - R : Mr T.V.Shiva K Rao, Chairman CII Sub-Committee on Standards, Mr Bhaskar Bhat, Mr Joe Bhatia, President & CEO, ANSI and Dr Sarita Nagpal, Deputy Director General, CII.



Mr Yashwant Bhawe , Secretary, Department of Consumer Affairs Ministry of Consumer Affairs, Food & Public Distribution, Government of India launching the US- India Standards & Conformance Program at Oberoi Hotel in New Delhi

HIGHLIGHTS

"SCCP programme has come to the present level, only with the strong support of the US and Indian governments. SCCP has a goal to create awareness in US and India about Standards and their use for resolving issues amongst importers and exporters,

and, manufacturers of goods" - *Mr Bhaskar Bhat, Chairman, CII National Committee on Gems and Jewellery.*

"Alliance between India and the US is creating a multitude of opportunities. SCCP has been designed to facilitate trade and offer U.S. and Indian companies an additional path to succeed in a foreign market. Time and again, we have seen that those who understand how to effectively influence and address standardization and compliance issues have the greatest success in the international marketplace" - *Mr Joe Bhatia, President and CEO, American National Standards Institute (ANSI).*

Standards open markets as well as are trade facilitators. If a nation has consumers demanding quality and quantity of goods produced, then ultimately standards will be developed."- *Mr Yashwant Bhawe, Secretary, Ministry of Consumer Affairs.*

"Partnerships between countries help small companies to come on the global stage and happen only when all the countries are speaking the same language" - *Ms Holly Vineyard, Deputy Assistant Secretary, International Trade administration, US Department of Commerce*

."Free trade leads to improved transparency and shrinking trade barriers. Technology transfers, information sharing, productivity enhancement are boosted due to free trade between nations" - *Mr Mark Dunn, Regional Manager of Asia, US Trade and Development Agency (USTDA).*

"Since the current international trade is governed by Standards and Conformance, I am happy that the USTDA is supporting this important programme which would help in making the Industry understand the importance of Standards. An Indo US commercial dialogue is a necessity for the development of listing the requirements that are necessary for entering and competing in the US market. - *Mr Anil Mukim, Joint Secretary, Ministry of Commerce.*

"Standards are important not only for consumers, but also for industries to protect their own interests and SCCP would be helpful in this direction" - *Mr Sharad Gupta, Director General, Bureau of Indian Standards.*

"Regulatory Standards are needed in the industrial and social sector, but India lacks them. SCCP will certainly bridge the gap between industry and external formulation" - *Mr Giridhar Gyani, Secretary General, Quality Council of India.*

"CII is extremely honoured to be a partner in this strategic programme which we see going a long way in building a stronger foundation for enabling trade amongst our two nations - US and India. Acceptance of products and services made by each other becomes possible only with cooperation on Standards and conformity assessment. We are committed to the goals which over the next two years would pave the path along 5 sectors identified mutually." - *Mr Chandrajit Banerjee, Director General, CII.*

2. **USA LAUNCH OF SCCP:** ANSI headquarters, USA, 2 March 2009.

Key Participants:

- US Trade Development Authority,
- American National Standards Institute,
- Confederation of Indian Industry,
- US Industry



(L - R) Mr Sreekumar Nair, Director, CII; Mr Joe Bhatia, President and CEO,

American National Standards Institute (ANSI);
Ms. Leocadia Zak, Acting Director,

U.S. Trade and Development Agency
(USTDA); Mr. Henry Steingass, Regional

Director for South and Southeast Asia, USTDA



(L-R) Ms. Mary Saunders, Deputy Assistant Secretary, Manufacturing and Services, International Trade Administration, U.S. Department of Commerce;

Mr. Joe Bhatia, President and CEO, American National Standards Institute (ANSI);

Ms. Leocadia Zak, Acting Director, USTDA; Mrs. Banashri Bose Harrison, Minister (Commerce), Embassy of India; Ms. Holly Vineyard, Deputy Assistant Secretary, Market Access and Compliance, International Trade Administration, U.S. Department of Commerce; Mr. Sreekumar Nair, Director, CII, US Office.

HIGHLIGHTS

Over the past fifteen years, the bilateral trade of merchandise goods between the United States and India has increased nearly 400%. In an effort to boost this relationship and promote further growth, the American National Standards Institute (ANSI) officially launched the U.S.–India Standards and Conformance Cooperation Program (SCCP).

“In order to be competitive and increase their overall productivity, U.S. companies doing business in India need more information and more dynamic resources. They

need to learn more about government regulations, industry standards, and the measures required to demonstrate compliance with them - "SCCP is focused primarily on the exchange of information. Together, ANSI, USTDA, and CII, working in close cooperation with BIS [the Bureau of Indian Standards, are making a commitment to empower U.S. and Indian stakeholders with the standards and conformity assessment information resources they need". *Mr Joe Bhatia, President and CEO of ANSI.*

Additional opening remarks were provided by Ms. Leocadia Zak, Acting Director of the USTDA, and Mr. Sreekumar Nair, Director, CII, US office. "CII appreciates and acknowledges the USTDA support and guidance from ANSI to design this project and assisting with resources both financial and technical to implement this very important initiative which will bring the businesses in both countries to come together and engage in a productive manner" *Mr Sreekumar Nair, Director, CII, US Office.*

CII is a beneficiary - as it will get the deliverables - Directory of US and Indian Standards, Standards Portal and a mechanism for resolving issues on Non-tariff barriers. The MOU signed between CII, BIS and ANSI brings together the stakeholders from industry and standards making bodies from India and USA together. Leaders in the U.S. and Indian trade community offered their perspectives on standards and conformity assessment activities.

Speakers included Dr. Belinda Collins, director of technology services at the National Institute of Standards and Technology (NIST); Ms. Holly Vineyard, Deputy Assistant Secretary of market access and compliance for the International Trade Administration (ITA); Mr. Henry Steingass, Regional Director for South and Southeast Asia at the USTDA; Mr. Geoff Jackson, Director for Policy and Programs at USTDA; Ms. Banashri Bose Harrison, Minister of Commerce for the Embassy of India; and Ms. Mary Saunders, Chair of the ANSI International Policy Committee and Deputy Assistant Secretary of Manufacturing and Services at the ITA.

3. **DIGITAL VIDEO CONFERENCE ON WATER EQUIPMENT** : 9 June 2009 at New Delhi, Mumbai, Washington

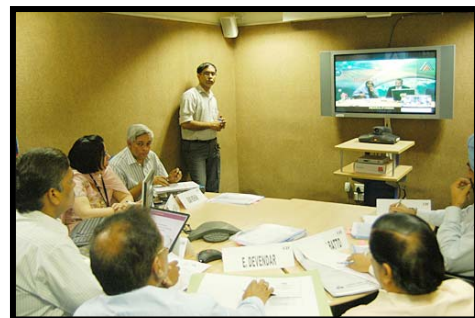
Key participants: USTDA, ANSI, BIS, CII, NSF, UL, QCI

Agenda of the DVC was to discuss various issues related to water and focused Introduction to Standards and Conformance Programs for Water Equipment in the U.S. and India

Following include the list of presentations made during the DVC:

- Overview of Indian Industry Activities for Water Equipment
- Overview of U.S. Environmental Protection Agency (EPA) Water Sense Program
- Overview of Indian Accreditation Activities for Water Equipment
- Overview of Underwriters Laboratories Activities for Water Equipment
- Overview of BIS Standards and Conformance Activities for Water Equipment

Following the discussions, BIS had agreed to initiate the process of adopting a standard being prepared by CII's Water Equipment Division for RO equipment





List of Participants

United States:

American National Standards Institute

Elise Owen, Representative for China and India Affairs

Leslie McDermott, Program Administrator, International Policy

Underwriters Laboratories

Erin Grossi, Manager, International Affairs

NSF International

Jane Wilson, Director of Standards

IAPMO

Allen Inlow, Senior Director, Business and Product Development

U.S. Department of Commerce, International Trade Administration

Erol Yesin, International Trade Specialist

India:

Confederation of Indian Industry

Mr. Rajesh Sharma, Chairman – Water Equipment Division

Dr. Sarita Nagpal, Deputy Director General

Mr. Marut Sengupta, Senior Director, CII

Mr. Harmit Sethi, Director, CII

Mr. Ram Mohan, Consultant, CII

Bureau of Indian Standards

Mr. Prem Kumar Battoo, Director, Water Equipment Division

Mr. E. Devendar, Head, Chemical Division

Quality Council of India - Dr. Venkatesh, Principal Advisor

UL India - Dr. TNVV Rao, Regional Business Development Manager

NSF International - Mr. Vaneet Gupta, Indian Representative

4. LAUNCH OF STANDARDS PORTAL (www.standardsportal.org.in) :

7 July 2009 at Hotel Taj Mahal, New Delhi



Hon'ble Minister of labour and employment Mr Mallikarjun Kharge at the Inauguration ceremony

The launch of the Standards Portal, www.standardsportal.org.in was organised by **Confederation of Indian Industry (CII)** jointly with American National Standards Institute (ANSI) and Bureau of Indian Standards (BIS) on 7 July 2009 in New Delhi. This move clearly reflects India's growing importance in the global arena.



Congratulating CII on the partnership to enhance trade relations between India and US, **Minister of Labour and Employment, Mr Mallikarjun Kharge** said, "I believe that this kind of tripartite agreement is an important step by the two nations i.e. India and US which will bring them closer on the trade front. The portal will facilitate interaction and engagement between representatives from industry and government in United States and India. Companies falling in various sectors will immensely benefit from the initiative by getting all the relevant information needed to access markets." The Standards Portal has been

launched under a MoU between CII, ANSI and BIS in December 2007 to facilitate trade between the two nations i.e. India and USA.

The Minister further added, “It is also important for the U.S. and India to effectively communicate what standards, regulations and conformance requirements are used in each country”. Increased communication will assure that each country’s policies and practices do not create conflicting or duplicative requirements, and will encourage best practices all around, said the Minister.

Highlighting the importance of the Portal in enabling India and US to address issues related to non tariff barriers, the Minister added “we must give this portal an appropriate name, as is the tradition in this country and everywhere else in the world. I suggest it be called *SAARTHI*, which means the chariot commander, whose role in commandeering a chariot is most crucial and on whom depends the outcome of any battle as he guides the chariot borne warrior”

Mr Yashwant Bhave, Secretary, Department of Consumer Affairs, Ministry of Consumer Affairs & Public Distribution stressed that the Standards Portal would play a pivotal role in bringing the two nations closer on the trade front. “With the launch of the Portal the consumers will get an indication that they could expect conformity in relation to standards which would create a win-win situation for all”, said Mr Bhave.

Mr Joe Bhatia, President and CEO, ANSI while expressing his heartfelt gratitude at the launch of the portal said that “80% of the global commodity trade is impacted by standards and conformity assessment programme” Standardisation is the need of the day. He further added that the standards portal, a key component of the SCCP, will be focused primarily on increasing transparency and information exchange.

Mr Venu Srinivasan, President, CII while delivering the Special Remarks said that the portal was an important step in bridging the gap on the trade front. “Standards are

the answer to trade barriers. If we all work together changes can happen and the launch of this portal is a step in this direction“, added the CII President.

Speaking on the occasion, **Mr Chandrajit Banerjee, Director General, CII** highlighted that the portal would help in creating a competitive environment which will enhance best practices.

A SNAP SHOT OF www.standardsportal.org.in

The screenshot displays the homepage of the Standards Portal. At the top, there are three banner images: a man standing next to a white Tata Nano car labeled 'INDIA US STANDARDS PORTAL', hands using a laptop with the word 'SARTHI' overlaid, and a collection of colorful gemstones with the CII logo and 'Confederation of Indian Industry' text.

Below the banners is a navigation menu with links: Home, Our Partners, Useful Links, Dialogues in Progress, Planned Activities, Past Activities, and Photo Gallery. A search bar is located on the left side.

The main content area features a section titled 'CII - ANSI - BIS Initiative' with a detailed description of the tripartite memorandum of understanding (MoU) between CII, BIS, and ANSI. Below this is a 'Focus Sectors' section with a dropdown menu, a 'key links' section with a cityscape image, a 'photo gallery' section with an image of a factory, and a 'Planned Activities' section with an image of a group of people.

At the bottom, there are logos for ANSI (American National Standards Institute), CII (Confederation of Indian Industry), and a third logo. The footer contains copyright information: '© Copyright © 2008-2009 CII | All rights reserved designed& developed by iStrat' and links for 'Disclaimer' and 'Privacy Policy'.

As a part of the initiative the portal website www.standardsportal.org.in was developed. The portal aims to improve market access for both Indian and American Companies by providing a framework of cooperation under the aegis of Standards and Conformance.

This portal captures the current status of forthcoming events, past activities, dialogues and issues that have been identified by both sides. The Standards Portal will host Five Standard Directories in the sectors of common interest and Master Training Manuals for exporters. The directories will include a comprehensive collection of applicable standards in India and USA covering Manufacturing/ Testing Standards, Conformity Assessment Standards and Regulatory Standards.

The portal aims to improve market access for both Indian and American Companies by providing a framework of cooperation under the aegis of Standards and Conformance. This portal would aim to answer queries of importers, exporters, certifiers, standards making organisations in the focus sectors about the systems operating in India and USA

5. PANEL DISCUSSION ON AUTOMOTIVE SECTOR: 7 July 2009 at Hotel Taj Mahal, New Delhi

The launch of standards portal was followed by a panel discussion on the automotive sector organised by Confederation of Indian Industry. The panelists included industry experts, representatives of the government, and standards making bodies from India and US.



Panelists

L-R:

Mr B Venkatram, Director, QCI; **Mr T V Singh**, Head - Transport Engineering & Scientist E, BIS; **Mr S Joe Bhatia**, President & CEO, ANSI; **Dr Sneh Bhatla**, Deputy Director General, BIS; **Mr Harjeet Singh**, President, SAFE & AVP, Hero Honda Motors Ltd; **Mr Vikram Gulati**, Director, Dept of Heavy Industry, Min of Heavy Industries & Public Enterprises; **Mr M S Kochar**, Sr GM, Mahindra & Mahindra Ltd; **Dr Murali Kallummal**, Consultant, Centre for WTO Studies and **Ms Rashmi Urdhwarsh**, Joint Director, ARAI

HIGHLIGHTS

Mr Harjeet Singh, President, SAFE & Associate Vice President, Hero Honda Motors Ltd.

- Standards are extremely important to industry.
- The self certification system in US can offer immense learning's to industry in India.
- Standards play a vital role in the trade process, with the trade barriers in place standards can help deliver the answer.

Mr S Joe Bhatia, President & CEO, American National Standards Institute

- The American automotive industry has developed various standards that help in maintaining the level globally. Some examples of these are the TC 204 standards for transport systems, TC 21 standards for batteries and secondary cells.
- Emission testing and development of facilities at national and international level are extremely important.
- Rethinking of vehicle efficiency levels is extremely important. Tata Nano which costs around \$2000 exemplifies how more efficient engines can be developed both in terms of technology and money.

Mr B Venkatram, Director, Quality Council of India

- Standards will help a way out of the trade barriers.
- Standards play the vital role in delivering quality products.

Mr T V Singh Head, Transport Engineering & Scientist E, Bureau of Indian Standards

- BIS have 14 divisions of standards with technical committees constantly working on developing standards for various industry sectors.
- BIS is working with ISO to develop on these standards.

Ms Rashmi Urdhwareshe, Joint Director, Automotive Research Association of India (ARAI)

- The WP 29 standard of UN on vehicle regulations is an example of India's total commitment to standards.
- Standards play a pivotal role in organising the industry. Simple standards will not be adequate to organize the industry.
- BIS automotive standards committee is an example of a third party for developing a series of standards.
- Given the challenges in industry regarding technology, automobile regulations standardisation can play a crucial role.

Mr M S Kochar, Senior General Manager, Mahindra & Mahindra Limited

- The tripartite agreement between CII, ANSI and BIS on standards program has come at the right time for the industry.
- Indian automobile industry is now at par with the world and there is severe competition between the players
- Americans are looking for fuel efficient vehicles while European market is focusing on subsidy usage.
- Standards will help in saving money and time and will also play a role in R&D processes.
- It is not only about selling on the numbers it is about delivering the product which meets quality requirements and customer expectations.

- India's needs to have self certification agencies like in the US to regulate our industry

Mr Vikram Gulati, Director, Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises

- The automobile industry in India has really grown. India has started to contribute on a vast scale in the global arena. The two wheeler industry has come up on a much larger scale.
- National Automotive Testing and R&D Infrastructure Project (NATRiP) helps boost the industry and develops the key infrastructure. With 7 centres and 4 green fuel centers developed, the project is likely to contribute on a large scale to the industry by developing higher standards.
- There is a need for synergy and coordination among industry members and standards developing body.
- There is an issue of data sharing which needs to be sorted out.

Dr Murali Kallummal, Consultant, Centre for WTO Studies

- The Center faced a number of problems such as date of circulation of notification, the language of text i.e. Spanish, French and English, while developing the database. This was inspite of the fact that information about TBT and notifications was available
- There is need for various levels of technology for different stakeholders.

Dr Sneh Bhatla, Deputy Director General, Bureau of Indian Standards

- Setting up the tripartite MoU is a step forward to enhance trade.
- A multi dimensional relationship has to be developed among the industry members. Manufacturers are keen to access markets.

- As automobile is a key sector, development of standards on a higher scale will help organize the sector
- Standards will definitely act as gateway to newer and existing markets.

During the discussion **SIAM raised the following 6 key points** for seeking information from the US side:

1. Existing standards in the automobile industry and the auto component sector including off road vehicles.
2. The procedure for self certification and meeting requirements under different laws in the US. For example Safety and Emission related.
3. The current standards under discussion and how we could participate in the discussion.
4. Position of US in relation to the various standards being discussed in international trade such as ISO, WP29 and more importantly, the people and department involved and how we can get in touch and develop a mechanism to discuss possibility of a common positive stand.
5. A database of key people and organisation in the US whom we could contact for more information.
6. End of life regulation and role of re manufacturing in US

6. **INDIA – US DVC ON WATER PURIFICATION:** 30 July 2009 at NIC Headquarters, New Delhi

Agenda focused on the issue of Water Purification Standards in both India and US.

Following presentations were made during the DVC:

- Government to Government Discussion on Trade Policy Forum Tariff & Non-Tariff Barriers Focus Group Agenda
- Indian Standards on Drinking Water Quality
- Conformity Assessment: Water Products, Water Quality, Bottled Water, etc.
- Conformity Assessment: Accreditation of Water Laboratories in India
- Industry View: Current Priorities and Emerging Trends in Water Safety & Quality
- Delineating Role of U.S. Government in Regulating Water Supply

Some Details of the SCCP Programme

KEY PLAYERS IN INDIA-US SCCP PROGRAMME

- U.S. Trade and Development Agency (USTDA)
- Confederation of Indian Industry (CII)
- American National Standards Institute (ANSI)
- Bureau of Indian Standards (BIS)

MEMORANDUM OF UNDERSTANDING (MOU) BETWEEN ANSI, BIS AND CII

In December 2007, ANSI formalised its partnership with the Bureau of Indian Standards (BIS) and the Confederation of Indian Industry (CII) by signing a tripartite Memorandum of Understanding (MoU). This MoU is a significant step towards ANSI's initiatives in India, which began with an agreement between ANSI and BIS, as national standards bodies, in September 2006

The tripartite MoU builds a relationship by including CII as a major representative of Indian industry which in turn reflects the goal of increasing industry participation in standards activities between both countries. The involvement of ANSI, CII, and BIS in the partnership allows stakeholders in the U.S. and India to take advantage of a permanent framework for addressing their concerns or questions.

The memorandum of understanding offers an additional path to success in a foreign market. Since the regulatory landscape can be particularly difficult to navigate without centralised sources of information, companies in both the US and India can leverage the close ties of ANSI, CII and BIS in the public and private sectors. These connections will help companies to get target information and speak directly with the right people to ensure the success of their business initiatives.

BENEFITS

- It acts as the gateway to access definitive information about standards, regulations and conformity assessment mechanisms that affect the entry and ability of products to compete in the two markets.
- Through a series of workshops, small groups of experts from targeted industry sectors will participate in technical discussions about regulations, standards, and conformity assessment activities that could significantly affect the requirements for their industry.
- This programme will create awareness in Indian Industry about the standards, conformance and regulations in the USA for their products so that their exports flow with more ease

STAKEHOLDERS

- Indian and US Industry
- Standards Developers
- Conformance Assessment Agencies
- Test Laboratories
- Government Regulators
- Trade Agencies and Import/Exports Promotions Agencies.

KEY MILESTONES



2009

- SCCP Launch in US and India
- Launch of Standards Portal
(www.standardsportal.org.in)
- Identification of key Industry sectors each in India and USA
- Development of Database for USA and India and store it in the Portal
- Develop and Implement sectors specific workshops in India by CII and BIS
- Study Mission to USA

2010

- Launch of US Directory
- Launch of Indian Directory and its availability on the Portal
- Directory of Conformity Assessment Bodies (CAB) and directory of the US Government Agencies (Regulatory, Trade and Capacity Building Agencies) on the Portal
- Five Sector specific Workshops by ANSI

- Sectors specific workshops by CII and BIS
- International interaction sessions with exporters from both India and USA.
- 1st Indo – US Summit on standards in trade.

2011

- Sustainability Plan for ensuring the effective long-term operation of the SCCP after the USTDA funded Technical Assistance has concluded
- Submission of Final SCCP Report

FACULTY PROFILE





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Memberships of Professional/Government Bodies:

- ◆ Started my career in the Fire Services from 1958 to 2001. From 1972 to 1984 worked as CFO in Himachal Pradesh and then CFO in Delhi Fire Services from 1984 to 2001.
- ◆ Former President of Institution of Fire Engineers (India)
- ◆ Council & Honorary Member of Commonwealth & Overseas Fire Services Association, U.K.
- ◆ Chairman, National Building Code Part-IV of Bureau of Indian Standards
- ◆ Member of High Level Committee, Godhra as Fire Expert appointed by Government of India.
- ◆ Worked as a Fire Expert for formulation of new building bye-laws for Municipal Corporation of Delhi, 2005.
- ◆ Worked as Director of International Fire Chiefs' Association of Asia from 1984 to 2001.
- ◆ Worked as Director in Jaypee Industries from 01.05.2002 to 30.07.2004 was looking after Fire & Safety of entire Jaypee Group comprising Hydro Power Project, Hotel Industry, Cement business etc.

- ◆ Presently working as Managing Director in DLF Services Limited looking after the fire safety of the group and the entire facility management of commercial complexes Pan India which is around 16 million sq. ft. of area.

International Seminar/Conference:

- ◆ On the invitation of the President of the Sri Lanka Branch of the Institution of Fire Engineers, UK delivered Key Note address in the Second National Fire Engineering Seminar, held at Colombo on 2nd-3rd March, 1995.
- ◆ Worked as an expert with CBI for investigation of Mandi Dabwali fire accident.
- ◆ Keynote Speaker on the conference “Fight against Calamity 2001” held from 10th to 13th May, 2001 at Netherlands.

Awards:

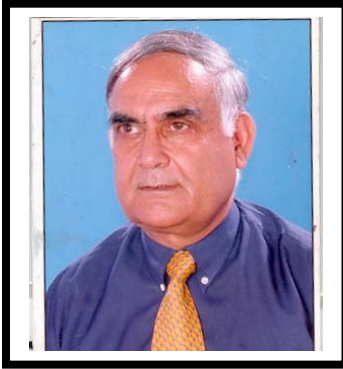
- ◆ Recipient of Distinguished Fire Services Medal from the President of India.
- ◆ Recipient of Meritorious Fire Service Medal from President of India.
- ◆ Recipient of numerous appreciations and commendation certificates from numerous social and Government bodies.
- ◆ In 2004 was awarded “Life Time Achievement Award” from Fire Protection Association of India.

Publications and Presentations:

- ◆ Only Indian author from fire service profession to contribute an article “Organizing of Fire Protection” within the chapter title “Fire” in the fourth edition of ILO Encyclopedia of occupational Health & Safety, ILO (Geneva).

Career Highlights/Accomplishments

- ◆ HIGH-RISE SAFETY: Introduced the concept of fire safety in high-rise buildings in Delhi through the Delhi Fire Prevention & Fire Safety Act, 1986 – the first ever fire safety legislation in the country.
- ◆ DISASTER MANAGEMENT CENTRES: The Delhi Fire Service is the first fire service in the country that has established 3 nos. Disaster Management Control centers equipped with the latest rescue equipment capable of dealing with natural and manmade disasters. The Hazmat cum emergency appliance that was inducted into service for the first of its kind in the country for handling chemical emergencies.
- ◆ Prepared comprehensive fire service legislation ‘The Delhi Fire Service Bill, 2001’ that has been passed by the Delhi Legislature.



Brig (Dr) B K Khanna

Senior Specialist (Training & Capacity Development)

National Disaster Management Authority

Government of India

NDMA Bhawan

A – 1, Safdarjung Enclave

Brig (Dr) BK Khanna is presently serving as Senior Specialist (Training & Capacity Development) in National Disaster Management Authority (NDMA), Government of India, since 28th Sep 2005. NDMA is the apex body in the country on mitigation and management of disasters in India. In his capacity as Senior Specialist, he was involved in formulation of National Disaster Management Policy, Guidelines on making State DM Plans, Earthquakes, Floods, Cyclones and Chemical (Industrial) Disasters. He was a National Core Group Member for evolving Guidelines on Chemical (Terrorism) and Incident Command System (ICS). Presently he is responsible for conduct of national level Table Top and Mock Exercises on various types of natural and human induced disasters in districts/MAH industries/schools. So far 76 national level Mock Exercises have been conducted in 30 States/UTs and 74 districts. Mock Exercises on Chemical (Industrial) disasters have also been conducted in 19 multi-hazard districts covering 33 MAH units.

2. Brig (Dr) B.K. Khanna did his doctorate in 'Internal Threat to India-Policy and Options' and has been in Disaster Management field for over 37 years, including nearly two years in the National Institute of Disaster Management (NIDM), Ministry of Home Affairs. Besides writing a number of articles on Disaster Management in various professional journals, he has written a book, 'All you Wanted to Know about Disasters', which was released by the Chief Minister of Delhi on 06 Aug 05 and has been prescribed as text book for MBA Course in Indraprastha University. Brig (Dr) B.K. Khanna has rich experience in Policy Formulation and making Perspective Plans.

He taught Policy Formulation at National Level and Making Project Studies at the War College, Mhow, Defense Services Staff College Wellington and BSF Academy, Tekanpur. While serving in NIDM, he was responsible and actively contributed in making Human Resource Development Plan of Government of India on Disaster Management which has been accepted by the Ministry of Home Affairs.

3. The Government of India recognized his Services to the Nation by decorating him five times including with Sena Medal & Vishisht Seva Medal.

4. His expertise in Policy Formulation in Disaster Management coupled with practical testing the DM plans for business continuity are great assets to any organization/institution.



Mr R C Sharma

Chief Fire Officer

Delhi Fire Services

New Delhi

Sh. R.C. Sharma is a science graduate from Punjab University and Master of Business Administration (Disaster Management) from Guru Gobind Singh Indraprastha University. He is a member of the Institution of Fire Engineer's U.K. and fellow member of IFE India.

He has 35 years of experience in various fire service organizations including the vital public sector undertakings such as Bokaro Steel Plant, Delhi Electric Supply Undertaking, Indian Oil Corporation, Hindustan Aeronautics Limited, Bangalore.

He is presently heading the fire service of National Capital Territory of Delhi since 2002 as Chief Fire Officer and as Director, Delhi Fire Service from August, 2009. He also served as D.I.G. (Fire) in the C.I.S.F. for the period of 03 years on deputation.

He has been assisting Bureau of Indian Standards, CISF in making/ updating the Building Codes of India and chairing the fire safety sectional committee CED-36 of BIS since last 02year. He has presented papers at various National & International forums.

He has received President's Fire service medal for meritorious services in 1997 and President' Fire service medal for distinguished services in 2007. He also received Gold Medal from National Civil Defence College, Nagpur.

ABOUT PARTNERS

CONFEDERATION OF INDIAN INDUSTRY (CII)

An organisation that works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

CII is a non-government, not-for-profit, industry led and industry managed organisation, playing a proactive role in India's development process. Founded over 114 years ago, it is India's premier business association, with a direct membership of over 7800 organisations from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 90,000 companies from around 385 national and regional sectoral associations.

CII catalyses change by working closely with government on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialized services and global linkages. It also provides a platform for sectoral consensus building and networking. Major emphasis is laid on projecting a positive image of business, assisting industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward our initiatives in integrated and inclusive development, which include health, education, livelihood, diversity management, skill development and water, to name a few.

Complementing this vision, CII's theme for 2009-10 is 'India@75: Economy, Infrastructure and Governance.' Within the overarching agenda to facilitate India's transformation into an economically vital, technologically innovative, socially and

ethically vibrant global leader by year 2022, CII's focus this year is on revival of the Economy, fast tracking Infrastructure and improved Governance.

With 64 offices in India, 9 overseas in Australia, Austria, China, France, Germany, Japan, Singapore, UK, and USA, and institutional partnerships with 213 counterpart organisations in 88 countries, CII serves as a reference point for Indian industry and the international business community.

ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE

As the voice of the U.S. standards and conformity assessment system, the American National Standards Institute (ANSI) empowers its members and constituents to strengthen the U.S. marketplace position in the global economy while helping to assure the safety and health of consumers and the protection of the environment.

The Institute oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector: from acoustical devices to construction equipment, from dairy and livestock production to energy distribution, and many more. ANSI is also actively engaged in accrediting programs that assess conformance to standards –including globally-recognised cross-sector programs such as the ISO 9000 (quality) and ISO 14000 (environmental) management systems. ANSI is the official U.S. representative to the International Organisation for Standardisation (ISO), the International Accreditation Forum (IAF) and (via the U.S. National Committee) the International Electro technical Commission (IEC).

The Institute also provides a forum for hundreds of ANSI-accredited standards developers that work cooperatively to develop American National Standards (ANS). Comprised of businesses, professional societies and trade associations, standards developers, government agencies, and consumer and labor organisations, the ANSI

Federation represents the diverse interests of more than 125,000 companies and 3.5 million professionals worldwide.

BIS – BUREAU OF INDIAN STANDARDS

The Bureau of Indian Standards (BIS) is the national standards organisation of India under the aegis of Ministry of Consumer Affairs, Food & Public Distribution and Government of India.

The Indian Standards Institution gave the nation the standards it needed for nationalisation, orderly industrial and commercial growth, quality production and competitive efficiency. However, in 1986 the government recognised the need for strengthening this National Standards Body due to fast changing socio-economic scenario and according it a statutory status. Thus came the Bureau of Indian Standards Act 1986 and on 1 April 1987, newly formed BIS took over staff assets, liabilities and functions of erstwhile ISI. Through this change over, the Government envisaged building of the climate of quality culture and consciousness and greater participation of consumers in formulation and implementation of National Standards.

The main objectives are as follows:–

- Harmonious development of standardisation, marking and quality certification.
- To provide new thrust to standardisation and quality control.
- To evolve a national strategy for according recognition to standards and integrating them with growth and development of production and exports.



Ministry of Commerce & Industry
Government of India

A CII INITIATIVE



Confederation of Indian Industry

STANDARDS & CONFORMANCE COOPERATION PROGRAMME 2009-2011

STANDARDS & TBT – HOW TO LEVERAGE?

ARE YOU AWARE OF THE KEY ISSUES BETWEEN INDIA & US ON STANDARDS FOR YOUR COMPANY PRODUCTS?

DO YOU NEED ACCESS TO US MARKET BY LEVERAGING STANDARDS?

AS AN AMERICAN COMPANIES ARE YOU AWARE ABOUT INDIAN STANDARDS ?



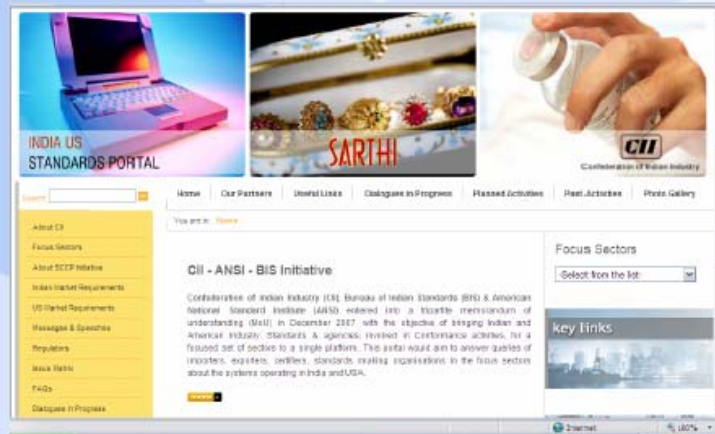
KNOW ABOUT STANDARDS UNDER DEVELOPMENT IN USA AND INDIA

KNOW ABOUT REGULATORS IN USA AND INDIA

CONFORMANCE STANDARDS USED BY REGULATORS IN USA AND INDIA

NETWORK WITH OTHER COMPANIES ACTIVE IN THE SUBJECT OF STANDARDS

YOUR PARTICIPATION IN THE SCCP PROGRAMME CAN OPEN THE WINDOWS TO THE US MARKET!



If you are not participating in Standards making, your only choice is to react to technical barriers!

Contact us to be a more effective player in the field of TBTs.

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Confederation of Indian Industry
Manufacturing Technology Services
Plot no. 249 -F, Sector-18, Phase-IV, Udyog Vihar
Gurgaon – 122015
Email : mohanish.kapur@cii.in

OUR PARTNERS



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