K.V CISF BHILAI

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Fire Safety Audit

OF

KENDRIYA VIDYALAYA

CISF UTAI DT- DURG

तत् त्वं पूषन् अपावृणु

केन्द्रीय विद्यालय संगठन

REPORT BY

Manoj Chauhan

Assistant Commandant/Fire

CISF Unit NSPCL Bhilai

1. INTRODUCTION

The **Kendriya Vidyalaya Sangathan** (lit. 'Chain of Central Schools') is a system of central government schools in India that are instituted under the aegis of the Ministry of Education , Government of India. As of May 2021, it has a total of 1,247 schools in India, and three abroad. It is one of the world's largest chains of schools. The motto of Kendriya Vidyalayas is *Tattvaṁ pūṣaṇa apāvṛṇu*, lit. 'O Sun , please uncover that'; in other words, "where the face of truth is covered by the golden lid, O Sun (God), please uncover so that truth and dharma are visible".

It is a system of central government schools in India that have been instituted under the aegis of the Ministry of Human Resource Development(MHRD) and came into being in 1963 under the name Central Schools. Later, the name was changed to Kendriya Vidyalaya. It is a non-profit organisation. Its schools are all affiliated to the Central Board of Secondary Education (CBSE). Its objective is to educate children of the Indian Defence Services personnel who are often posted to remote locations.

Kendriya Vidayalaya CISF Utai is situated at CISF 3rd RB Bhilai Campus . presently it is being run in a Building named Bhagat singh barrack, which was earlier used for bachelors living accomodations of CISF. KV Utai is CoEd school and providing quality education from Class 1 to XII.

The Kendriya Vidyalayas have a four - fold mission, viz.,

- To cater to the educational needs of children of transferable Central Government including Defence and Para-military personnel by providing a common programme of education ;
- To pursue excellence and set the pace in the field of school education;
- To initiate and promote experimentation and innovations in education in collaboration with other bodies like Central Board of Secondary Education (CBSE) and National Council of Educational Research and Training (NCERT) etc.
- To develop the spirit of national integration and create a sense of "Indianness" among children.

2. Aim of Fire Audit

Ensuring life safety of students, teaching staffs and staff members during fire is very necessary. In the light of recent tragedies involving school children, like the Kumbakonam fire tragedy, Dabwali fire incident and earthquakes around the world where school children were affected due to unsafe school/college/institute buildings. It becomes of utmost importance that safety of student is given due consideration. The requirement for fire prevention, life safety in relation to fire and fire protection of buildings, Occupancy and protection features that are necessary to minimize danger to life and property from fire. Fire prevention measures are a key element in the fire safety management of institute. This involves the identification and elimination of potential fire hazards both inside and outside the building, and the establishment of good housekeeping practices, periodic inspections and the diligent application of safety rules.

Fire audit has been carried out keeping all aspects in mind as above and necessary arrangements have been discussed briefly. This Fire audit Report compiles the details regarding fire risk analysis, existing fire protection arrangements, deficiencies and recommendations for further improvements of the Kendriya Vidyalaya Building..

Critical studies of all the sections were conducted by physical visit by the auditor with representative of KV Utai and assessed fire hazards, existing fire protection measures and further fire prevention & fire protection requirements.

National Building Code of India-2016, Part-IV (Fire &Life Safety) and BIS 14435 (Fire Safety in Educational Institutions- Code of Practice) were mainly referred for fire audit and recommendations are being suggested accordingly .

3. The primary objectives are:

(a) **Life and safety arrangements at building.**

(b) **Structural resistance of building**

(c)**To comply with relevant acts and regulations that relate to fire safety in buildings.**

(c) **Assessment of fire fighting arrangements.**

For ensuring the life safety of occupants from a fire, the following are the requirements in general:

(i) Provision of adequate No. of properly designed, unobstructed means of exit of adequate capacity which are available at all times.

(ii) Availability of alternate means of exit for use, if the already chosen one is inaccessible due to fire, heat, smoke and toxic gases.

(iv) Adoption of compartmentation and all other adequate passive fire protection measures to ensure the safe ingress/evacuation of the occupants in case of fire.

(v) Provision of adequate and reliable fire alarm systems in the building to alert the occupants;

(vii) Adequate illumination and marking of the means of egress.

(viii) Formulation, organisation and practice of effective evacuation drill procedures.

4. Details of Building

Name of Building	Kendriya Vidyalaya CISF Utai (Bhagat singh barrack)
Date of inspection	07/06/2021
Name of Inspecting officer	Manoj Chauhan Asstt. Commandant/Fire CISF Unit NSPCL Bhilai
Address of Building	Kendriya Vidyalaya CISF Utai Dt- Durg Chattisgarh
E mail & Telephone number	bhilaicisfkv@gmail.com 0788-2970920
Type of Building	Educational Building Classification made as per NBC part-4 2016 Group B. Since classes are running upto senior secondary hence further sub-classified as Subdivision to B-1.
Height of building	Building height is less than 15 mtr and have Ground floor and first floor only. .
Use of building	Building is being used for Kendriya Vidyalaya as a temporary arrangements till construction of permanent school building. It has 14 class rooms , 02 computer labs, physics laboratory, chemistry laboratory, biology laboratory, library , hall rooms . Office of Principal, staff room, stores and 01 room for medical first aid.

Fire hazards	Main fire hazards at building are office files and stationary item furniture's and furnishers, electric operated equipments like AC, Computers, corrosive chemicals and inflammable liquids etc.
Occupant load	Teaching staff- 23 Non teaching staff- 04 Student- 545

5. FLOOR WISE DETAILS

Kendriya Vidyalaya is presently running in a residential barrack of CISF . Permanent building of Kendriya vidyalaya Utai will be constructed at other location. Presently following arrangements have been made to utilise the building for school.

- **Ground Floor**- Ground floor has 06 class rooms, 02 laboratory, 01 principal office, 01 staff room, 01 computer lab,07 store rooms, 01 hall,
- **First floor**- 08 class room, 01 laboratory,01 computer lab,01 library 01 store room,

6. POTENTIAL FIRE HAZARDS:

The best measures to be adopted for the prevention of a fire are to eliminate potential fire hazards. Therefore you need to know what fire hazards are and what you should do to remove them from your workplace. Some potential fire hazards are listed below:

- ► Electric wiring in poor condition.
- ►Electric system those are overloaded, resulting in hot wiring or connections, or failed components.
- ►Storage of flammable and corrosive liquids especially at Laboratory.
- ►Storage of combustibles with insufficient protection.
- ►Storage of combustibles near equipment that generate heat, flame or sparks.
- ►Smoking of cigarettes, cigars, pipes, etc.
- ►Ignition sources such as candles, lighters, match, etc.
- ►Equipment that generate heat and utilizes combustibles.
- ►Use of cooking appliances, stoves, LPG, heaters, etc. disregarding safety guidelines.
- ►Poor housekeeping practices

7. Structural resistance of building

School building namely Bhagat singh barrack is constructed by CPWD and structurally safe to use and certificate of this affect has been given by CPWD on date 07/05/2021. which is enclosed with this report for ready reference.

Construction of building has been done as per provision of National Building Code and passive fire protection arrangements have been ensured.

Building height – Below 15 mtrs

No of floors - 02 floors (Ground floor and 1st floor)

8.. Access to to the building -

As per Requirement NBC 2016.The approach to the building and open spaces on all its sides is adequate and capable of taking the mass of fire engine weighing upto 45 tonnes. The said open space was kept free of obstructions and shall be motor able.

9.. Arrangement of Exit, corridor and passage ways

For ensuring the life safety of occupants from a fire, the following are the requirements in general. Provision of adequate no,s of properly designed, unobstructed means of exit of adequate capacity which are available at all times. Exit is available at this building. Stairs are available upto terrace for alternate and to assemble at safe place away from smoke, heat etc.

The total occupants from a particular floor must evacuate within 2.5 minutes for Type-1 building with travel distance of 22.5 mtr. Width of stair is 1.5 mtr and tread width is 300 m and riser height is 150 mm. hand rail is also provided and its height is 1 mtr and suitable as per norms.

Observation

1. As per BIS 14435 -1997 clause 6.2, Exits should be so arranged that at least two separate exits are available in every floor area. At present only one exit is available on both floor. Ground floor exits can be modified easily and alternate exit is required at first floor for safe and speedy evacuation. Since Kendriya vidyalaya is running temporarily in a residential barrack, hence offices can be shifted at first floor for low occupancy to hold over the alternate exit.
2. Exit sign with arrow indicating the way to the escape route shall be provided. The floor indication board shall be placed on the wall immediately facing the flight of stairs and nearest to the landing. It shall be not less than 0.5x.05 m.
3. As per NBC 2016, clause 4.4.2.4.2 .b in the case of building where there is a central corridor, which is part of exit access, the doors of rooms shall open inward to permit

smooth flow of traffic in the corridor. Presently all class rooms and staff room are provided with door which are opening inward, but wire mesh door also provided which are opening outward to corridor and will obstruct traffic. Hence wire mesh door may be removed for safe evacuation.

4. As per clause 4.1, of NBC 2016, high occupancy areas may be required to have announcements system to direct the occupants toward safe egress routes and to avoid situation of panic during distress. .

10.. Requirement of Fire fighting arrangements and their status

As per NBC 2016, following are the requirement in this Building and there status is as under.

a. Fire Extinguishers:

Portable fire extinguishers are an important part of the overall fire protection arrangements for any facility. Portable fire extinguishers are not expected to deal with large fire since those are essentially first aid firefighting equipment.

Portable fire extinguishers are intended to as first line of defense to cope up with fires of limited size if used timely. The essential requirement is suitable type of portable fire extinguishers and their location for quick application. Periodical inspection, testing of the extinguishers and training of personnel are equally important.

Physically checked different type of fire extinguishers deployed in various locations in the building and reviewed adequacy and further requirement keeping in view the above factors. As per BIS 2190, school building has Medium Hazards and accordingly extinguishers have been assessed.

Following fire extinguishers have been already deployed in the building. Fire extinguishers are being maintained by a local agency named **M/S Top Flame tech Bhilai** Durg and checked on annually basis and gives demonstrations to staff and student which has verified through photographs.

Arrangements of Class rooms and deployment of extinguishers is as under. Additional requirement is also assessed .

Floor		Details of rooms	Existing Fire Hazard/Risk	FAFF System provided	AS per norms (BIS &NBC)	Recommendation	Rem
Ground Floor	Left side corridor	Laboratory(Physics & Chemistry)- 02 Class Room- 03 Principal office -01 Computer lab- 01 Store room -04 Hall-01	Electric fire, A Class fire Chemical risk at lab	DCP-06 Kg-02 CO 2 4.5 Kg -01	DCP-06 Kg-02 CO 2 4.5 Kg -01 Clean agent 2 kg-01	Clean agent 2 kg-01 (Near Computer lab)	
	Right side Corridor	Class room- 03 Staff room -01 Store room -03	Electric fire, A Class fire	DCP 06 kg-01 CO 2 4.5 Kg -01	DCP 06 kg-01 CO 2 4.5 Kg -01		
First floor	Left side Corridor	Class room- 04 Libraray-01 Computer lab- 01 Bio Laboratory- 01	Electric fire, A Class fire	DCP 06 kg-01 CO 2 4.5 Kg -01	DCP 06 kg-01 CO 2 4.5 Kg -01 Clean agent 2kg-01	Clean agent 2 kg-01 (Near computer lab)	
	Right side Corridor	Class room -04 Store room -01	Electric fire, A Class fire	DCP 06 kg-01	DCP 06 kg-01		

Suggestion- 1. Fire extinguishers are kept on ground and not properly visible. Extinguishers should be installed at convenient conspicuous location preferably 1 m above ground level and at corridor of building.

2. Record of First aid fire fighting training should also maintained, which is not being maintained at present. Staff of KV school are being trained by agency who looks annual maintenance and refilling of fire extinguishers, hence the record of training should be maintained with signature.

3. All extinguishers should be so located at corridor, as to be available within 15 meter radius.

KENDRIYA VIDYALAYA CISF BHILAI

DETAIL OF FIRE EXTINGUISHERS INSTALLED IN THE VIDYALAYA

S. No.	Year of Purchase	Type	Number Alloted	Place Where Installed
1	2011-12	ABC Type Dry Powder	**Fire Ext. No.01**	Inside Office
2	2011-12	ABC Type Dry Powder	**Fire Ext. No.02**	Outside Office
3	2011-12	ABC Type Dry Powder	**Fire Ext. No.03**	Library
4	2011-12	ABC Type Dry Powder	**Fire Ext. No.04**	Outside CMP
5	2011-12	ABC Type Dry Powder	**Fire Ext. No.05**	Staircase
6	2014-15	CARBON DIOXIDE	**Fire Ext. No.06**	Inside Chemistry Lab
7	2014-15	CARBON DIOXIDE	**Fire Ext. No.07**	Inside Physics Lab
8	2019-20	CARBON DIOXIDE	**Fire Ext. No.08**	Inside Biology Lab
9	2021-22	ABC Type Dry Powder	**Fire Ext. No.09**	Outside class XI
10	2021-22	ABC Type Dry Powder	**Fire Ext. No.10**	Outside class II
11	2021-22	ABC Type Dry Powder	**Fire Ext. No.11**	Inside Principal Room
12	2021-22	ABC Type Dry Powder	**Fire Ext. No.12**	Outside class VII
13	2021-22	ABC Type Dry Powder	**Fire Ext. No.13**	Outside class IV
14	2021-22	ABC Clean Agent	**Fire Ext. No.14**	Outside Sr. Comp. Lab
15	2021-22	ABC Clean Agent	**Fire Ext. No.15**	Outside Jr. Comp Lab

Detail

ABC Dry Powder	10
CARBON DIOXIDE	3
ABC Clean Agent	2
TOTAL	**15**

01/10/2021

01/10/2021

प्राचार्य/Principal
केन्द्रीय विद्यालय, सी.आई.एस.एफ.