



Indian Institute of Technology Kharagpur (WB) 721 302

Cryogenic Engineering Centre

Announces a One-day Training Programme on

Causes and Prevention of Hospital Fires

Venue: Bhubaneswar, Odisha on October 22, 2017 (Sunday)

Fire in a hospital can be devastating for the patients, their relatives and the morale of the hospital. Even if there is no death in a fire accident, it leaves a deep scar on the image of the hospitals, apart from the financial damage it causes. According to reports in news media, there is one and only one root cause of all hospital fires: **Short Circuit!** However, it is not true in most of the cases! The over-simplification and wrong understanding, which are manifestations of incomplete knowledge on the mechanisms of initiation and spread of fire, often unjustly implicate persons and equipment for the lapses and direct the investigations in an entirely wrong direction. The fire departments, hospital administrations, state health authorities, insurance companies, doctors, nurses, attendants, machine operators, hospital architects, equipment purchase department and equipment suppliers need to understand why a hospital is particularly vulnerable to fires. With proper knowledge, awareness and appropriate system practices, hospitals can undertake required modifications of their system configuration and practices, including training of their personnel to prevent such fires.

Coordinator of the program: Professor Kanchan Chowdhury, Professor, Cryogenic Engineering Centre

SHORT CURCUIT IS NOT THE ROOT CAUSE OF MOST OF THE FIRE INCIDENTS IN HOSPITALS!

Faculty and his credentials: Professor Kanchan Chowdhury, Professor, Cryogenic Engineering Centre

- A Mechanical Engineering graduate (IIT Kharagpur 1978) and Ph D in Cryogenic Engineering (1984)
- Faculty at IIT Kharagpur since 1984
- Conducted research in the US, Germany and Australia
- At the invitation of Assam Government, surveyed about a dozen hospitals in Assam and submitted a 109-page report to Assam Government on root causes and prevention of fire in hospitals
- Published a paper entitled "Fires in Indian hospitals: root cause analysis and recommendations for their prevention" in Journal of Clinical Anesthesia (2014) 26, 414–424 by Elsevier.
- Presented invited talks at conferences and different hospitals in the country.
- Conducted training programs on Prevention of fires in hospitals at Kharagpur and Pune.

Course Outline: *Hospital Fires: Root causes and their Prevention*

7-points to be covered in 7 hours of the one-day program on Hospital Fire Safety:

1. There has been a rapid rise of fire incidences at hospitals in India in recent years. During the last 3 years, media has been reporting at least one such fire incidence every month on an average. Many of these fire incidences, which resulted in deaths and loss of public confidence in health-care system, involved air conditioning system and incubators. Oxygen enrichment of air is the probable cause of most of these fires. Some fires may happen due to enrichment of air due to flammable chemicals which are used in hospitals.

2. Normal air contains 20.9% oxygen by volume. However, as oxygen gas leaks out through oxygen hood or masks, its concentration in the air increases locally. Beyond 23.5%, it is dangerous for most electrical equipment. As the frequency of door-openings decrease in the night, ventilation almost stops and oxygen concentration steadily builds up in the atmosphere inside the ward, leading to fires in wee hours of the day.

3. Equipment used inside the wards are designed to operate safely in normal air. The heat (electrical or friction) or spark (due to usual operation or loose contact) generated in a machine, which otherwise is harmless in normal air, may cause neighbouring plastics or solder to be on flames as oxygen concentration or chemical vapours in air increases.

4. Most Plastics, lubricating oil, soft solders, aluminium, carbon steel, thin stainless steel, all kinds of rusts, dusts and powders etc. are prone to fire in oxygen-rich and chemical-rich environment. All these elements are present in hospitals.

5. Split and Window Air Conditioners, as they are designed and constructed now-a-days, are unsuitable for use in hospital wards where oxygen is applied to the patients. Most of the parts are made of plastics, motors used to drive the fan may be unsealed, shaft-bearing in the fan use lubricating oil, and electronic control panel has transformers and relays. As these ACs have very limited ability to ventilate (split ACs do not suck fresh air at all), their use results in building up of oxygen or chemicals concentration inside the ward which leads to initiation of fire. If hospitals rely on split ACs for ventilation, the patients inside the ward may in fact suffocate. Central AC, if designed correctly, performs the job of ventilation better and do not allow build up of oxygen concentration.

6. Ventilation in hospitals may be better accomplished by using enthalpy recovery wheel, which saves on the refrigeration capacity of the air conditioners as well. Arbitrary direct mixing of fresh air or opening the doors, destroy cooling capacity and often does not ensure sufficient dilution of oxygen concentration or chemical concentration.

7. As oxygen cylinders and oxygen concentrators are increasingly used at home, recommendations given in this program for fire prevention are equally applicable here. Devastating fires have taken place while oxygen is used at home.

Eligibility: Doctors or persons engaged in planning, construction, quality management, safety or administration of hospitals with degree or diploma in science, arts, commerce, engineering, medicine, nursing, architecture or law.

Venue of Lectures:

IIT Kharagpur Extension Centre at Bhubaneswar
Mouza Samantapuri (Near Swosti Plaza)
Bhubaneswar 751013, Odisha

Date: October 22, 2017 (Sunday)

Timing : Classes will begin at 9-30 AM. There will be breaks for lunch and coffee. Classes to end at 5-30 PM.

Registration:

The following information about the participant is required for registration:

Name, Designation, Responsibility in hospital Industry, Name and Address of Company, Phone (Off), Phone (Res), Phone (Mobile), E-mail, Date of Birth, Highest Academic Qualification, Nationality, Bank transfer details and Amount,

Registration fee: **INR 6,000 plus 18% GST. Pure government departments, State or Central, are exempt of paying GST. GST No. 19AAAJI0323G1ZM.** Bank transfer is the only mode of payment for all participants. A scanned copy of the bank transfer document is required for registration (as proof of payment).

Bank details: (a) Name of Bank : Syndicate Bank, (b) Address of Bank: IIT-SRIC Extension, Kharagpur 721302, India; (c)Account Name: CEP-STC, IIT Kharagpur; (c) Address of Beneficiary: Indian Institute of Technology, Kharagpur, PIN: 721 302, West Bengal, India; (d) Account Number: 9556 220 000 2955; (e) IFSC/RTGS Code : SYNB0009556 (f) Bank Swift Code: SYNBINBB120.

Course fee includes working lunch and tea/coffee provided during the course.

Accommodation:

Accommodation has to be arranged by participants themselves.

Sponsors please note:

Please give copy of this brochure to the nominated person and request him to contact course-coordinator directly via e-mail to inform about their nomination and to communicate the participant details. If he/she wants to share his/her personal experiences regarding hospital fires with the coordinator of the program beforehand, the incidences can be taken up for discussion in the class during the program.

Please E-mail all information to:

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