



INFRASTRUCTURE

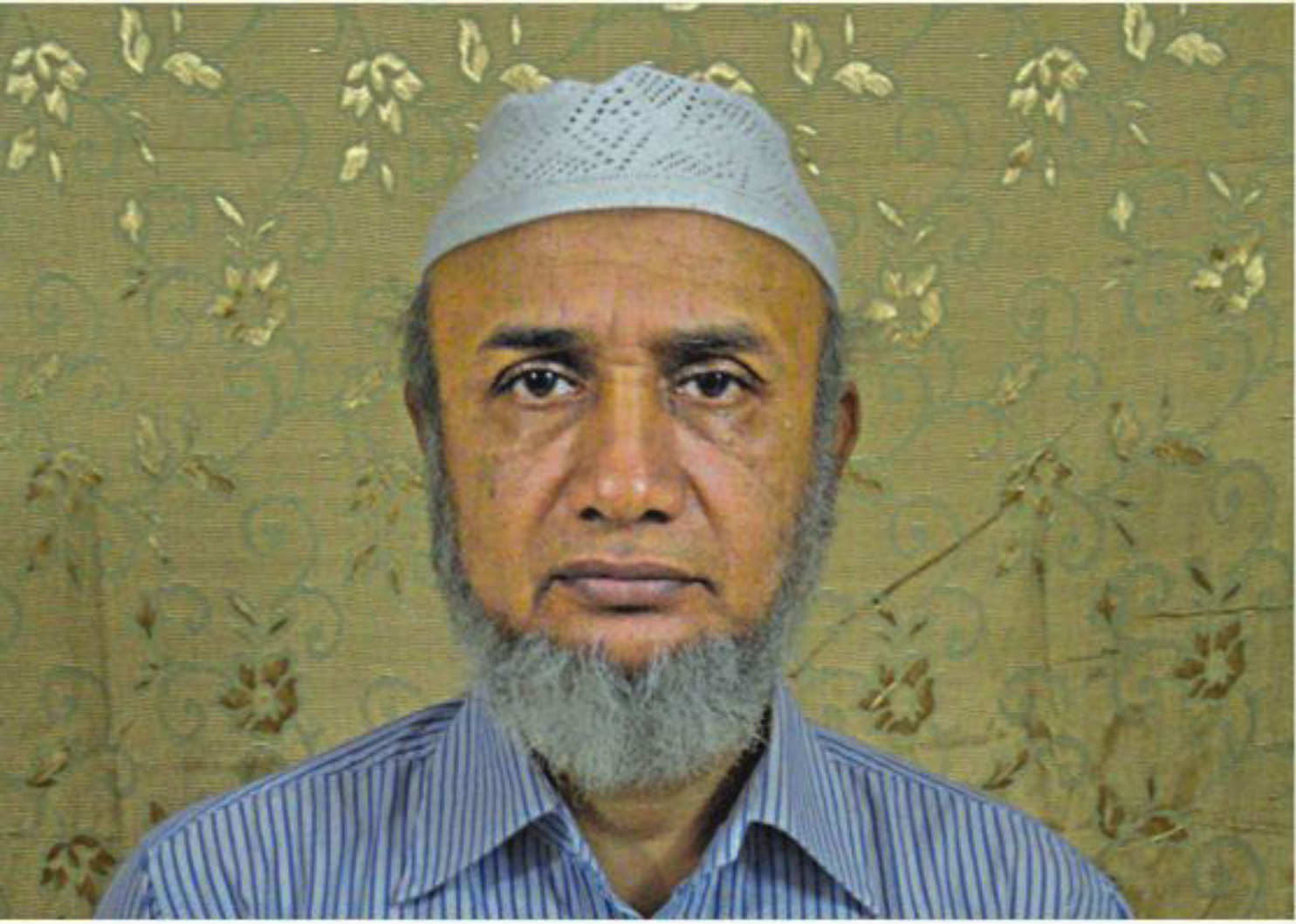
FIRE SAFETY ISSUES IN BUILDINGS OF DHAKA CITY

Recent fire incidents raise concerns

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The human race advanced from the Stone Age when it found a way to control and use fire. Control means the ability to ignite and extinguish fire as desired and acquiring the knowledge to control the size, temperature, heat release rate and the velocity of propagation of fire.

As fire is a necessary component of



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human life, we must know how to use it in a controlled manner. Unfortunately, ignorance, reluctance to follow safety rules and negligence cause hundreds of fire accidents throughout Bangladesh. According to the Fire Service and Civil Defence (FSCD) Department, there were about 80 fire accidents in Dhaka city last year alone. The deadliest fire in recent times was the Chawkbazar fire this year.

So what are the reasons behind some recent deadly fire accidents in Dhaka city? What were the post-accident consequences? And was there any violation of fire safety rules? What can be done to prevent or reduce the number of casualties of major fire-related accidents?

The fire at Nimtoli of old Dhaka occurred about nine years back and the Chawkbazar fire, also in Old Dhaka, occurred in February this year. These two incidents are of the same nature—the fire spread fast due to chemical godowns and, as a result, many people were killed. In the recent Chawkbazar incident, due to the explosion, the wall of the upper floor of the building cracked and collapsed, injur-

ing and killing people in the adjacent road.

As per fire rules of Bangladesh National Building Code (BNBC, 2006), chemicals must not be stored in a residential building. The detailed classification of these types of materials, method of merchandising, handling and processing are laid out in the updated version of the BNBC. The godown for these types of chemical should not only be separated from any type of occupancy, but these chemicals must also be stored in specially built godowns with explosion venting facilities.

In Old Dhaka, most of the structure are made of reinforced concrete and buildings are multi-storied of variable heights. In most of the areas, there is little gap between buildings. In residential buildings, the area per person is less than the standard value. As per BNBC 2006, the standard value of area required per person is 18 square metres (minimum), irrespective to the locality. Special conditions of high-density localities like Old Dhaka were not considered in BNBC 2006. In the updated version of BNBC, this special condition was considered and minimum standard condition for high-density metropolitan city was sug-

gested. As per this condition, irrespective of its type of development, housing should be planned and organised in groups or clusters.

Although Old Dhaka is highly populated, there is still enough space for ensuring minimum standard of living condition. The apartments or housing system of Old Dhaka should be modified into some form of clusters and groups. The only problem is

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the proper design and implementation. To solve the scarcity of water needed for firefighting, hydrants can be installed at some regular intervals, by the roadside of Old Dhaka. WASA can do this if they wish. As FSCD has long hose pipes to spray water, narrow roads should not be a problem for firefighting. This type of hydrant is available in most of the cities all over the world.

In Old Dhaka, there are about 20,000 small storages/godowns and manufacturing facilities where low-income people work and supply different commodities to Dhaka citizens as well as to all over the country. These stores and manufacturing units mostly handle types of materials which are not highly flammable and are of low- or medium-class hazard. As per the law of the country, this type of mixed occupancy is allowed.

The residential buildings of Dhaka city are made of mainly RCC structure which are non-combustible and retain strength when burnt by normal flame temperature. As of today, no Bangladeshi building made of RCC collapsed after a fire incident. Residential buildings up to the fourth storey don't need any type of fixed

firefighting system as per BNBC rule. In the last few years, a huge number of high-rise buildings were constructed in Bangladesh. Most of them are not designed following fire safety rules. All the high-rise buildings should have horizontal and vertical separation between floors and apartments, stairs and fire exits, fire lifts, etc, as per BNBC. There are no fire experts to check the design in the approving committee formed by the approving authority as prescribed in BNBC. Even in the updated version of BNBC, despite suggestions, no fire expert is included in the approving committee. Buildings constructed after the fire law promulgation can easily be modified for fire safety. Proper guidance and monitoring are needed.

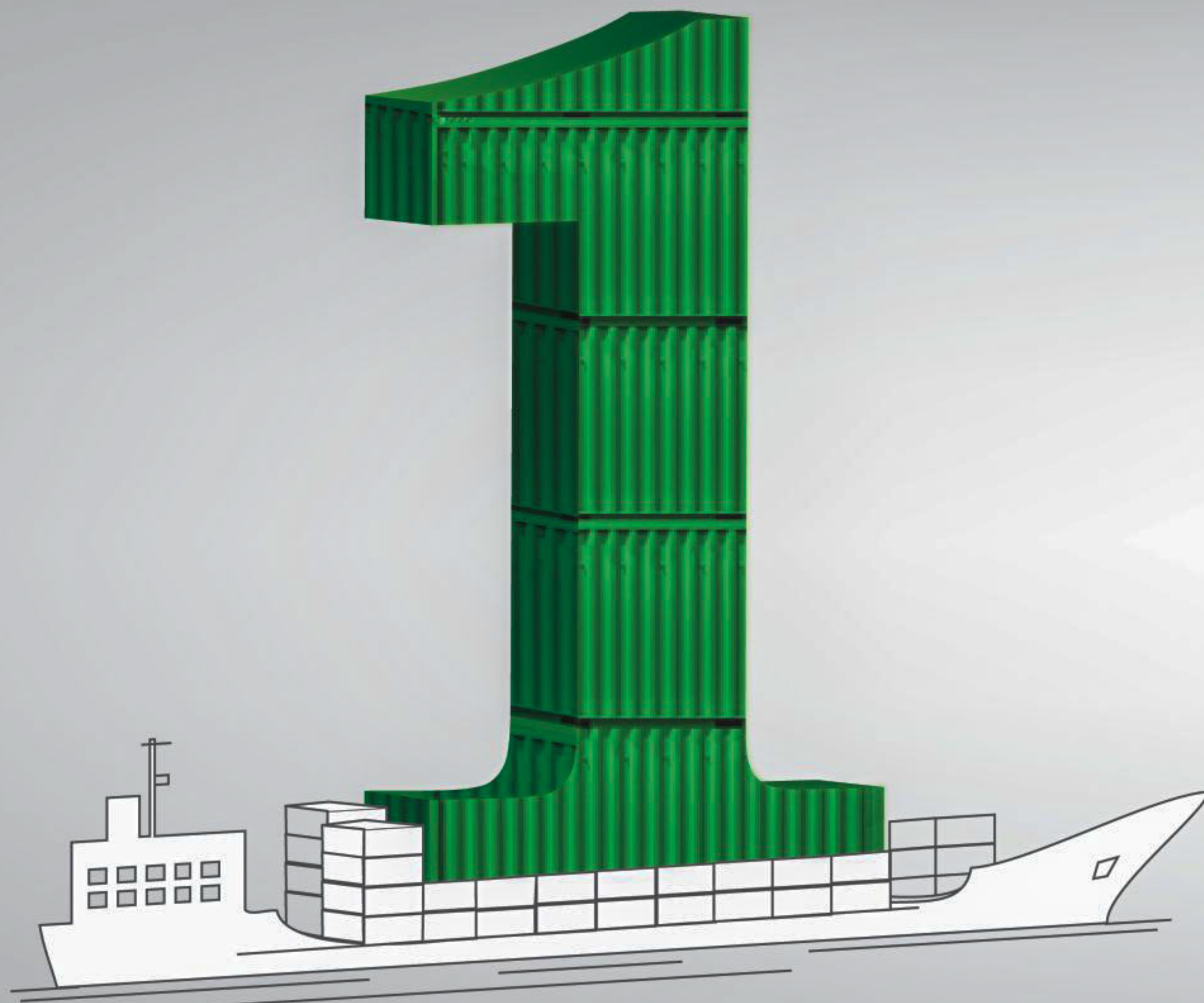
From the recent data of fire casualties throughout the country, it is observed that about 40 percent of people who went to the hospital with burn injuries got their injuries from fires originating from household gas burner. Leaked gas from the cylinder accumulates in the kitchen and at the time of ignition, the gas inside the room ignites and the gas cylinder explodes. As these cylinders work at a relatively low pressure, its quality is not critically designed and tested. The quality of the fitting system of the cylinders is also not seriously maintained. Due to lack of awareness and negligence and other faults, gas leaks occur in kitchens. As the weight of LPG gas is heavier, it mixes with the room air to a proportion sufficient to ignite a fire resulting in explosion. To avoid this, a habit of ventilating the room air before igniting the burner may reduce this type of accidents. Normally, kitchens are designed to have ventilators in the ceiling which is of no use for venting out this leaked LPG gas. These cylinders should be designed with an extra-pressure venting system so that it will not explode no matter what the pressure or temperature is. A new type of composite and explosion proof cylinder is available. Having ventilator at the floor level of the kitchen may help vent out the leaked gas from the kitchen and may reduce the number of accidents.

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Burnt buildings in Chawkbazar area of Old Dhaka on February 21, 2019.

PHOTO: PALASH KHAN



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