The Daily Star

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Construction Hazard: Creating awareness and the role of stakeholders

RFL Pipe & Fittings (a brand of RFL Group) in association with The Daily Star organised a roundtable titled "Construction Hazard: Creating awareness and the role of stakeholders" on December 12, 2019. Here we publish a summary of the discussion.

Brig Gen Shahedul Anam Khan ndc, psc (Retd), *Associate Editor, The Daily Star*

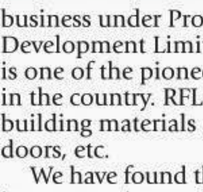
We are here today to discuss a subject that remains topical on a constant basis: the hazards of construction. Unfortunately, although the volume of construction-related work in the country has increased, safety measures have not been able to keep up with the growth in construction work.

R N Paul, *Managing Director, RFL Group*

RFL now manufactures all goods locally instead of importing finished products. RFL is involved in direct construction business under Property Development Limited (PDL), which is one of the pioneers in real estate in the country. RFL manufactures building materials such as pipes, doors, etc.

We have found that the workers in construction or the irresponsible contractors are causing public nuisance. The major reason why this is happening is because the people in construction are mainly non-corporate people who are lacking in accountability and responsibility. They are unaware of personal protective equipment (PPE) and have minimal knowledge on ensuring public safety during construction. Corporate people from RFL or PDL at least have knowledge on public hazards. We do not create construction hazards since we use modern technology such as Horizontal Directional Drilling (HDD) machines. To avoid high levels of noise pollution caused by welding aluminium window frames, RFL has introduced PVC window frames which are ready to be directly fitted.

Engr F R Khan, *Managing Director, bti (Building Technology & Ideas Ltd.)*



One issue is that data on deaths during construction projects is missing. Safety has now become a part of branding; constructors do not actually care about it. The idea of safety on construction sites must be implemented not only by creating awareness among construction workers, but also through enforcing safety regulations.

Recently, the labour department has started inspecting construction sites, and we hope their drive continues. We can learn from the example of Japan when trying to figure out how to impose construction safety measures on the workers. In Japan, construction workers must have a certified ID from the labour department or any other related department. This ID certifies that the worker must follow construction safety rules, and they must present this to work on any new project. This increases accountability of both the workers and their employers.

A F M Saiful Amin, *Professor, BUET*

There needs to be more awareness about construction-related deaths and injuries; there is a need for information on the number of people injured or killed due to construction hazards, since that will make people more vigilant. Construction workers and the general public must also be made aware of the consequences of being exposed to these hazards.

Licensed engineers, technicians, and builders are required to create a three-layer structured licensing authority. Contractors try to minimise cost of construction and so invest less in hazard mitigation. If on-site construction can be shifted off-site, then hazard sources can be minimised. Prefabricated construction uses heavy machinery to streamline the construction process and causes less hazards to the general public.

We only allow professional engineers who have gotten the certification of work experience, to work on site, while graduates work under the supervision of a professional engineer. But this practice is yet to be implemented among technicians.

R N Paul

There has been a paradigm shift from conventional construction practices to more structured methods. People following safe construction methods should be rewarded, while the ones causing public nuisance should be punished. This will create incentive for constructors to not cut costs in maintaining safety.

Engr Kazi Khairul Bashar, *Honorary Assistant General Secretary (A&I), IEB*

There is an occupational safety board in Bangladesh which needs to be activated and empowered to look after hazards related to construction.

I am against the idea of monopolisation of construction works by a few big contractors. In reality, big construction companies delegate projects to small contractors or sub-contractors. Unless and until we can create awareness among these small contractors about safe construction practices, we will not be able to bring any meaningful change.

Engineers and related professional bodies need to be given more responsibility so that they can ensure professionalism and maintain standards of those involved in the construction sector.

Md Abu Sadeque PEng, *Executive Director, HBRC*

Construction hazards must firstly be defined from the perspective of Bangladesh, in order to clearly outline the dimensions for mitigation recommendations.

Technological advancement is required, not only within developers or contractors, but also in the planning and designing phases. Scrapping plaster and painting on high-rise buildings will reduce hazards without cost. Reducing the weight of materials used to construct buildings will also decrease hazards.

The aspect of safety precautions should be brought up when registering real estate developers.

Engr F R Khan

Construction hazard and construction safety are completely different things and they must be considered separately. Construction safety entails safety measures taken by the workers for themselves and also the passers-by, while construction hazard is indirect harmful effects on the people around the construction site.

Currently, we are implementing hundred percent use of concrete blocks as an alternative to bricks because the material itself is advantageous. In addition, it also helps reduce environmental pollution.

Md Abu Sadeque

Buildings which are plastered and painted require maintenance every two to four years. It has environmental impacts.

R N Paul

Regulatory bodies have a big role to play in ensuring use of green construction materials. Many companies are importing modern building technologies that can significantly reduce construction related hazards. The government should support these initiatives.

Md Abu Sadeque

Government policies are now pro-people regarding bricks. The government has already stated that after June 2025 no bricks will be used in any government project. Thus, the government is looking to let go of conventional bricks for good. Concrete blocks are deemed to be double the price of bricks, but I do not agree with this thought process. One concrete block is equivalent to about five bricks. Good quality bricks are priced at thirteen taka per piece. Keeping that in mind, one concrete block is priced at forty taka per piece. This proves that concrete blocks are actually cheaper. The use of bricks also requires the utilisation of mortar and labour. The lesser weight of concrete blocks implies that less money would be spent on beams, columns and overall foundation. The use of concrete blocks decreases the overall construction cost by about thirty percent.

A F M Saiful Amin

The extent of hazard will determine the boundaries of our safety limits. If hazard increases, then safety measures will have to be increased proportionally.

Engineer S M Khorshed Alam, *President, Bangladesh Association of Construction Industry (BACI)*

With the advancement of the construction industry, people now also require answers and explanations as to where the industry is headed. The National Disaster Management Policy, 2015 includes ten different types of hazards. Tsunami, cyclone, earthquake are all a part of it. However, construction hazard itself is not mentioned in it. This led me to believe that hazard may be the outcome of construction.

The mitigation process regarding construction hazards usually involves the structural and non- structural approach. The structural approach includes construction as a mitigating factor. The non-structural approach consists of awareness-building, training and so on.

Occupational health and safety issues and environmental issues are the two main components of overall hazards. Road construction generally creates dust. The dust emission leads to breathing problems, skin abnormalities, and related issues. Should these kinds of problems also be included when we talk about construction related hazards?

A road accident might be caused by faults in the geometrical design. A collision of trains might occur due to faulty rail tracks. Everything, in this way, directly or indirectly, can be linked to construction. This is why we need to define the limits of construction hazard.

We must emphasise on coming out of the 'monopolising' nature of the construction industry. We should train small contractors and make them aware of safe construction practices.

A construction process actually begins with the planning and designing of the project. If a faulty construction project is the result of a mistake in the geometrical design, and it was built by the contractor following the design, who would be held as the guilty party? The planners, designers, architects, builders, users and drivers all form a sort of chain. All parties must be brought together to identify where exactly things go wrong.

The Bangladesh National Building Code (BNBC) 2006 includes all the topics related to construction induced hazards. The Bangladesh Labour Act (2006) also defines safety issues of the construction workers. The Bangladesh Environment Conservation Act (1995) covers environmental issues. These kinds of policies are there, available in our legal system. However, awareness of such regulations is lacking. Therefore, we need to provide training to construction related professionals.

The government has taken an initiative to provide skills training to about five lakh people. Under this project, we are working closely with the government to train a large number of construction related professionals in the country.

Abu Salem Md Nuruzzaman, *Additional Chief Engineer, Roads and Highways Department, KMG Project*

Our tender documents are flawed in some ways. Conditions are mentioned in them, but no other information is provided. However, the implementation processes should be mentioned, where the required equipment should also be included. The ways to mitigate pollution should also be mentioned. A contractor must be compelled to follow instructions, and their payment should be halted in case they do not. This could be a way of ensuring efficient construction practice.

Hazard is two-fold. One is during construction and the other is post-construction. When I was working in design processes, a foot over-bridge, made of steel, was one of the projects I was involved in. It was suggested, at that time, that a reinforced cement concrete (RCC) be put into place. I was against this idea because I believed that it would cause traffic jams at the Dhaka Airport Road. I then designed a steel structure, and a small foot over-bridge was thus established there. Therefore, in order to decrease hazards in construction, we must emphasise on improving our designs. We, in Bangladesh, import stones and clinkers. We grind cement, but we do not manufacture it from scratch. Why don't we use steel structures? It would decrease costs right from the foundation, decrease overall hazard and it would be easier to set up.

We, in Bangladesh, are selling topsoil to India in the form of brick export and importing stones from them. This does not bode well for the future as we will be eventually left with no clay. Hollow bricks should be used wherever possible. These types of bricks are also highly insulated. During winter, this keeps the building warm and during warm weather it would generally require less use of air conditioners.

Tender documents need to be made in a way which covers all safety measures and which binds contractors to follow the correct procedures.

Dr Rawshan Ara Khanam, *Consultant, Respiratory Medicine, United Hospital Ltd*

Unsafe construction poses huge health risks. According to WHO, nine out of ten people in Bangladesh inhale polluted air. Dhaka is also one of the most polluted cities in the world. Presently, nobody seems to be safe from the consequences of construction hazards. Even the participants of this roundtable are victims of air pollution.

PM 10 and PM 2.5 come mainly from construction. These affect the lungs and the total body. WHO, in 2013, detected the particle matter of PM as the main cause of lung cancer. Polluted air has increased the overall number of strokes, cardiac diseases and premature deliveries. Dhaka, being a congested area, does not have many planned areas or playgrounds for children. Childhood obesity is also an issue, as children are not able to run and play freely. It could even be a source for further diseases as the child grows up. This is somewhere we need to focus on. Construction workers may develop fibrosis from inhaling polluted air at construction sites. They develop such diseases at an early age, usually. We must be careful about these health hazards caused by unsafe construction.

Dr Md Tarek Uddin, *Professor, Islamic University of Technology (IUT)*

Globally, about 40 billion tonnes of CO2 are emitted annually. The cement industry itself emits around four billion tonnes of CO2 annually, which constitute ten percent of total global emissions. Even if Bangladesh does not produce cement from scratch, we still use the raw material and thus CO2 is emitted because of it. Alternative methods are being thought of at this moment. Alternative cement and durable concrete are examples of substitutes which are being used currently.

A hundred years from now, there might be a need to demolish many old buildings and structures in our country. This would also be a huge hazard which we are leaving behind for our future generations. We should seriously consider recycling of construction materials to preserve natural resources for the future.

Our curriculum needs to be modified in line with our future development goals. We work in the field of accreditation and there are three main features: (1) students must be made aware of the environmental issues; (2) students must be made aware of the sustainability factor; and (3) students must be made aware of the needs of the society. When a student graduates, it does not mean that that individual has come to the end of his or her education life. When a graduate joins a corporate job in Bangladesh, does that organisation provide that graduate with the needed 'line of action'? Is the graduate then receiving competent training? Companies in Bangladesh also need to work in this area to help graduates understand the value of environmental and social issues.

In some parts of Bangladesh, the air quality index (AQI) is close to 300. If it crosses 300, our country will be considered as a 'severely polluted area'. Bangladeshis do not seem to be concerned with such data, but it is high time that we took the needed action to counter overall pollution. Foreign contractors, and our authorities, are well aware of environmental impact assessments (EIAs) of all the construction projects. Then, why is nothing being done? Why are we still facing such dire circumstances in regards to air pollution?

Millions of Bangladeshis are being affected because of pollution due to construction projects. We have accepted our situation in the country, and the government needs to play its part in addressing the issues at hand as 2030 is fast approaching (SDGs). The government can set targets for major Bangladeshi corporations to achieve. The goals of Vision-2041 will also become tough to achieve if action is not taken. I believe that the three main stakeholders who can help us make the needed transitions are the education sector, the government and the major industries.

A F M Saiful Amin

The Industrial Revolution was mainly driven by coal. Our economic development, in civil infrastructure, is highly vital to our overall future development. The past three revolutions have resulted in the constant use of coal, with it being a common factor to all three phases. Today, some governments, which were the driving forces of these revolutions, are providing compensation to those who have been affected by pollution due to the consequences they faced because of these advancements. Chronic obstructive pulmonary disease (COPD) and fibrosis are diseases for which these administrations are providing compensation by doing a cost-benefit analysis. This sort of a calculation is far from being established in Bangladesh, even though costs are being borne by the people.

Rapid construction implies a reduction in the duration of exposure. The precast concrete method was utilised to construct the Berlin Wall, which was completed in a relatively short amount of time. The Great Wall of China was an onsite construction. It took many years to be completed and caused various types of hazards. We, in Bangladesh, have still not been able to introduce the precast method of construction, proving that we are still at the Great Wall stage in terms of technology.

Md Abu Sadeque

Our construction industry is still not recognised as an independent industry. All industries should be monitored so pollution caused by them can be controlled. The construction industry is not exempted from it.

All construction projects should be accompanied with data which depicts the amount of pollution and hazards. This is the only way that we can bring the construction industry under the ambit of a controlled environment. The Metro Rail project, for example, needs to be examined thoroughly. Are conditions being given to project managers, or project heads, to limit the amount of pollution being emitted?

R N Paul

Thank you all for attending this programme. The discussions have been positive and fruitful. I believe that the major stakeholders of the construction industry will be made aware of the existing issues with the publication of today's discussion.

If all the involved parties play their parts, lawfully and efficiently, it would help us in achieving all the goals we have set for ourselves.

Brig Gen Shahedul Anam Khan ndc, psc (Retd)

We should be really careful about the hazards caused by the construction sector. Once we have determined the hazards, we need to find ways to mitigate them. The laws and regulations are present in our legal system, but the implementation stage is where we are lacking.