

Subcontinent at Nuclear Peril

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As India and Pakistan accelerate their hunt for acquiring new weapons of mass destruction and aim towards each other, the entire edifice of security environment of South Asia would be in quandary unless otherwise the peripheral countries take the changing security environment into consideration and reassess the national security perception.

In the year 1974, maybe coincidentally but paradoxically on the auspicious day of Lord Buddha's birth, Mrs. Indira Gandhi, late prime minister of India surprised the world by exploding India's first nuclear device at Pokhran and heralded her country's dangerous journey on the nuclear path.

other countries of the subcontinent including Bangladesh, remained unmoved. Hardly any open concern was strongly voiced by these countries even at regular summits of SAARC or other regional meetings.

Ever since both India and Pakistan had openly demonstrated their nuclear prowess, few months back by exploding nuclear devices, arms testing long-range strategic nuclear warhead, the entire world has now focused their attention towards the subcontinent. India went a step ahead by declaring its "nuclear doctrine", making her intentions clear to arm its forces with both tactical and strategic nuclear weapons.

As discussed earlier, India played the China card from the very beginning of the initiation of the nuclear programme and had been declining to sign any kind of international treaties restricting nuclear activities unless China also agreed to do so.

The fast changing security environment is bound to alter the security perception of the smaller countries that are in the region, especially in the case of Bangladesh which is the second largest country in the region in terms of population, surrounded by India almost on three sides with Bay of Bengal in the south which is also dominated by India.

The largest area that was and is still being claimed to be a part of Chinese territory and remains a bone of contention between the two countries, lies adjacent to our north-eastern border, geographically connected with the rest of India, through a 28 mile wide land strip flanked by Nepal and Bangladesh known as Siliguri corridor.

Since China's annexation of Tibet on 7 October 1950, and integrating it within her territory, India took the mantle of championing the Tibet cause and provided shelter to thousands of Tibetan refugees including Tibet's spiritual leader, Dalai Lama.

As initial reaction to the nuclear doctrine, USA dismissed India's China card and reacted sharply. In a press briefing, the US State department spokesman, Mr. James P Rubin said "There is nothing new about China's nuclear doctrine. They have been doing it for a long time that I was born."

Mr. J N Dixit in his recent published book "Liberation and Beyond: Indo-Bangladesh Relations" writes about how Pakistanis wanted to put the strategic use of the Siliguri corridor to their advantage and this was one of the strategic considerations of India to help Bangladesh gain independence (page 56-57).

Dhar [DP Dhar] a few days after surrender, at VIP lounge of Calcutta airport. I suggested to Dhar that it was important to get from Bangladesh government an agreement on what I consider to be three essentials: guarantees for the Hindu minority, rationalization of the enclaves, transit rights by rail and inland waterways through Bangladesh with use of facilities at Chittagong DP (Dhar) with his charming smile, turned around and said "Jack, you are a soldier. These problems are political. They can be sorted out at the appropriate time. I replied that the appropriate time was now and it would be very difficult later to obtain any agreement. He smiled again" (page 98-99).

As India formulated and declared the nuclear doctrine keeping in view the alleged Chinese nuclear deployment in southern China, which is deemed to have been threatening India's national security, India would, in all eventuality, deploy her land and sea based "minimum nuclear deterrent" to counter Chinese threat mainly in north-eastern part of India.

Pakistan's nuclear programme is stemmed out of its threat perception and keeping parity with India and would continue to do so and the major dispute over Kashmir seems to be getting rather complex as year passes by without any sign of amicable settlement in near future. Pakistan's nuclear programme does not cause as much immediate concern for smaller countries bordering India's north and north-eastern periphery as does India's perceived deployment against China.

India's nuclear doctrine manifests sea-based nuclear deterrence which means adding surface ships and submarines capable of carrying and launching sea based strategic ballistic missiles, within the Navy, use of Bay of Bengal for launching such weapons against China cannot be ruled out in a nuclear conflict scenario involving China.

We, being one of the major countries surrounded by the second largest country in the world in terms of population and a newly emerged nuclear state, should be concerned of the new dimension added to the security perception in South Asia and reassess our stand.

Through India used and continues using the China card to justify her nuclear programme yet its 1974 N-test sent a shock wave to arch rival Pakistan, which was till then licking the wound from its humiliating defeat in 1971 at the hand of India. The then flamboyant Prime Minister of Pakistan Zulfikar Ali Bhutto openly vowed to bring Pakistan at parity with India by acquiring weapon grade nuclear technology. He is on record as saying that, Pakistan would eat grass if need be but would acquire nuclear technology to safeguard national security. Thus the world saw initiation of nuclear proliferation in one of the poorest region, particularly between two of the poorest countries of the world.

The big powers including USA, hardly took any tangible steps to restrain these two countries from treading this dangerous path of nuclear weapons except that of occasional rhetoric on Pakistan's nuclear programme which could not deter Pakistan's quest to achieve parity with her arch rival. Surprisingly, during all this period

POLLUTION of atmosphere due to smoke emission from automobiles is experienced as a long-standing problem throughout the world, particularly because of wide application and use of internal combustion fuel. Exhaust gases from the automobile engine contain unburnt fuel Hydro Carbon (HC), partly burnt fuel Carbon Monoxide (CO) and Nitrogen Oxide (NO). Sulphur Dioxide and Lead. These compounds pollute the air and many have a certain impact on humans and the environment.

and container trucks in which injection pumps of these diesel vehicles are adjusted to give a high fuel air ratio so as to increase the power of the engine. Such practice known as over fueling, causes the diesel fuel to be incompletely combusted and leads to black smoke emission.

The two main types of automotive engines used are the diesel and the petrol engine. Normally diesel engines are at higher risk of smoky emission than the petrol engine. The diesel engine, a compression-ignition engine and it requires a large amount of oxygen for the complete combustion of diesel. Any wear and tear of the engine that causes insufficient air to be introduced into the system results in incomplete combustion of the fuel and this leads to black smoke emission. Diesel engines are found in vehicles that are more heavily loaded e.g. goods carriers and buses.

Now we can discuss about Dhaka City. At present, Dhaka appears to be one of the most polluted cities as far as pollution concentration reaches 35 ppm due to automobiles. This figure runs at par with cities like Chicago, New York. The concentration of cars here is less in number and the main evil in this polluting activity is the hydrocarbon; 55 per cent of it comes from the exhaust, 25 per cent from the crank case and 20 per cent from the petrol tank carburetor.

According to an unofficial survey, during every 12 hours between 8.00 a.m. and 8.00 p.m. about 25000 nos. petrol and nearly 13000 nos. diesel vehicles ply in the Gullstan area of Dhaka emitting about 13 tons of gaseous substances. These include 82 per cent of carbon monoxide, 14.7 per cent hydrocarbon, 3.2 per cent nitrogen oxide, 0.05 per cent ammonia and 0.11 per cent aldehydes. The vehicles also discharge organic acids and most dangerous benzopyrene and carcinogen compound. At present about two lac motor vehicles ply in Dhaka Metro area. A survey reveals that 85 per cent of the vehicles emit smoke more than the recommended range.

While the acceptable noise level is about 45 decibels, it is much beyond in many parts of the city. Even in the silent zones like hospital and school areas, the noise level is in between 70 and 90 decibels and somewhere even 120 decibels.

Health problems associated with inhalation of smoky vehicle emissions include breathing and respiratory disorders, aggravation of existing respiratory and cardiovascular diseases, alteration in the body's defence systems against foreign materials and damage to lung tissues. The chief pollutants, some of which are invisible, comprise smoke particles, lead

Automobile Pollution Contemplating Emission Control Measures

by Md Zahangir Alam



carbon monoxide, sulphur dioxide and nitrogen dioxide. From recent surveys conducted in our cities we know that presence of lead in the bodies of children is eight times the level permitted by the World Health Organisation. Every year 15000 deaths occur due to diseases related to air pollution. Lead is absorbed mainly as fine particles and affects many systems (central nervous, cardiovascular, endocrine, reproductive) in the body. Lead accumulates in blood, bones and soft tissues. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation and behavioural disorders. Experts believe that lead concentration in blood amongst residents of Dhaka must be higher than in any other city in Bangladesh or abroad and there is no provision to test the lead content of automobile exhaust. The leading chest specialists are saying that cases of asthma and bronchitis are increasing rapidly due to our air pollution and children are affected badly. Carbon monoxide enters the bloodstream and reduces the delivery of oxygen to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular diseases. Exposure to carbon monoxide is also associated with impairment of visual perception, work capacity, manual dexterity, learning ability and performance of complex tasks.

Sulphur dioxide can be absorbed of the nose and upper respiratory tract where it gives an irritant effect. Other health effects associated with exposure include impairment of respiratory function, alteration in the lung's defences and aggravation of existing respiratory and cardiovascular diseases. Sulphate particulate causes impairment of respiratory function. Nitrogen dioxide is an irritant gas that is readily absorbed into the mucus of the respiratory tract. It can irritate the lungs, decrease lung function and lower resistance to respiratory function. Health effects vary from a mild inflammatory response to bronchitis and bronchopneumonia.

When exhaust sound and horn cross the tolerable level, it causes headache, emotional tension, cardiac disease, nervousness, high blood pressure and permanent damage of hearing. Noise pollution in Dhaka has already resulted in psychological disorders such as irritability, aggression and sadism, a higher propensity to crime, lack of efficiency and intellectual deficiency. In order to control/overcome the above situation the following measures may be adopted:

- a. The government has to consider carefully before adding more road space to keep up with increasing vehicle population growth, bearing in mind the use of land for other needs such as housing, industries, parks and recreational areas. There is, therefore, a need to curb vehicle population growth to avoid also the serious traffic congestion.
b. Import of vehicles may be reduced and stiff duty and vehicle registration fees may be imposed on higher rate.
c. To reduce air pollution from vehicles is to introduce measures to curb individual vehicle emissions to pre-empt any deterioration in the air quality as a result of an increase in vehicle population. The strategy lies essentially in the use of improved fuel quality and engine design to ensure lesser amount of pollutants emitted from vehicles. Inside this, to reduce the poisonous exhaust gas emissions and sound pollution, all vehicles should be equipped with hot-air-injection system, exhaust gas recirculation and catalytic converters with sound control jackets and equipment. 'Catalytic Converters' can convert harmful pollutants into harmless gases without entering into the chemical reaction while encouraging catalytic reaction with another. For example in HC/CO, catalytic converter encourages HC (hydrocarbon) to unite with Oxygen to produce H2O (water) and CO (Carbon dioxide). The catalytic in the NO splits the nitrogen from the oxygen. We can use metal alloy adopter for near combustion by pre combustion fuel auto-matisation process for which there will be no poisonous emission from automobile exhaust whatever may be the age of the vehicle, say, even 40 years.

As a respectable and responsible citizen, you can make every drop of petrol second loss amounts to nearly 2000 litre per year. By using a complete combustion system you can save precious petrol/diesel to make oil resources last longer, reduce the foreign exchange drain. At the same time you will get more mileage from the same fuel and the environment will be saved from the pollution to a great extent.

The Ministries of Home/Communication/Environment may adopt the following measures:

- a. Setting of emission stan-

Table titled 'Penalties for Smoky Emission' with columns for Smoke Level and Penalty. It lists penalties for different smoke level ranges (e.g., 51-70 HSU, 71-85 HSU, 86 and above) and details equipment requirements and fines.

- d. Standards for type-approval to ensure that only low emission vehicles can be registered for use.
e. On the road enforcement on smoky vehicles, and
f. Mandatory periodic inspection for in-use vehicles.
g. Emission standards for vehicles registration to be strictly followed.
h. Encourage private sector/NGOs to introduce efficient technology to improve

Table listing emission standards for different vehicle types: a. Petrol Driven Vehicles, b. Diesel Driven Vehicles, c. Motorcycles/Baby taxi. It specifies CO and HC percentages and HSU limits.

air quality with better vehicles. Take initiatives for marketing improved lubricants and unleaded fuel and efficiently monitoring their quality, delivery system - specially the petrol pumps which allegedly mix kerosene or some other low cost oil with vehicular fuel. Set up information network involving the stakeholders to increase knowledge and consciousness among the owners of the factories and automobiles. Cleaner fuels have a major impact on improving air quality. Fuel composition partly determines quality and quantity of emissions from vehicles. It is an offence for vehicles to emit excessive smoke on the road. Vehicles with smoky emissions may be stopped by the traffic police and BRTA officers. The smoke emission limit for in-use diesel vehicles is 50 Hartidge Smoke Unit (HSU) using free acceleration test method. Hartidge Smoke Metre is to be deployed to various points of Dhaka/Metro Cities to conduct on-the-road spot check, and penalties may also be imposed instantly. Motor Cycles and three wheelers known as baby taxis, major culprits for polluting the city air, can also be prosecuted. The enforcement of these vehicles are based on visual observation by police officers. Motor vehicles are to be inspected according to type and age. It is mandatory once and in some cases twice a year. During the inspection, exhaust emission tests are to be conducted. The following limits must not be exceeded during emission test: No vehicle's road tax will be renewed if it fails to get its emission tested. Eventually, don't we feel that it is the right time to act collectively from the part of Govt, NGOs, private sectors and people at the grassroots level as well as to come forward to combat this ever increasing menace or else the days are not too far when we will have to pay the price for our next generation. The writer is a Senior Assistant Secretary now working in the Ministry of Youth and Sports.

