ISSUES IGNORED AT RIO

During 2nd to 14th June 92, the biggest ever conference on environment and development was organised at Rio.

A lot has been written about the issues which were discussed at the conference, whether it was about the use of CFC or excessive emission of carbon dioxide, methane or protection of the forests. Today, this entire debate on environment is primarily posing the questions which are political and not technical in nature. However, the entire treatment put forward is technical in nature. There is the problem of ozone depletion hence, control the release of CFC; there is the problem of greenhouse gases hence, control the emission of these gases. For the problem of deforestation, a biotechnically-developed fast growing tree is available. The whole emphasis is on developing green technology to restrict the pollution. Nobody knows whether these green technologies will be environment-friendly or not. The efforts are primarily towards replacing substances which have come under criticism from the scientific community. The new substances which are going to be used in different production processes are not yet known to produce any negative effect on the environment, but that does not mean these substances are totally safe. The only thing is that all the problems are not yet discovered. Till date, no one knows the environmental effect of biotechnically-developed seeds or plants.

One area of dispute which has emerged is whether the rich industrialized countries are going to pay for the environmental damage they have caused in the last one century (in the name of economic development) or not? It seems that the North is unwilling to accept this demand of poor Southern countries. Apart from these visible issues, certain other issues also emerged during the conference.

One thing which came across very strongly during the conference, specially from the Global forum at Rio, was that environment is not an issue of wild life, forest, clean air or ozone depletion alone. It is primarily the issue of an economic model which operates within the limitations of nature. At the end of the twentieth century, people are realizing that the model of macro economics is the basic cause underlying the environmental crisis. The issue of debt crisis, poverty, desertification, control over biodiversity, patent rights and GATT are all linked together and have political and economical implications. Hence, without effectively dealing with both the political and economical dimensions of these issues, we will never be able to work towards sustainable development.

This economic significance of the conference was realised by the business houses and as a result, a number of them were present both at the Global forum and the official conference. But, the most surprising thing was the near total absence of Workers' representatives and trade unions from this significant conference. Two or three unions which did attend the conference were almost invisible; they were not able to organize any significant discussion on issues related to a worker's life and its relationship with the larger environmental issues. The working class perspective was totally missing, despite the fact that the decisions taken in the conference would have a long-term effect on different products, i.e. chemicals and their production processes, role of multinational corporations, their manner of functioning in different countries, etc. All these developments would have a definite effect on workers. In the Global forum, the discussions were primarily focusing on the framework in which today's production processes are organized and its effect on the society and the environment. In such a conference, which has the potential to affect the workers drastically, the absence of trade unions and workers' representatives was indeed very alarming. Only the Brazilian trade union federation "CUT" had a stall at the Global forum and did organize one meeting on 'trade unions and environment'. But this meeting was very poorly attended and the discussions primarily focused on the work done by the organizers, instead of discussing the larger issues and trade unions' perspective and its role in environment.

This is not to say that whatever was done by "CUT" was insignificant in any way, but it was shocking to recognize that at such an important gathering, the perspective of workers was largely missing.

(Continued on page 13)
The use of coal has an ancient history in India as is borne out by the remains of Mohanjodar and Harappa, and the iron pillar at the site of Qutb Minar in Delhi. However, Coal was principally used in earlier times for domestic fuel and also for refining iron ore. The steps towards commercial mining of coal in India started in the late 18th century, but faced a lot of obstacles till the early 19th century. In 1774, two employees of East India Company, proposed to mine and sell coal in India, but their samples were rejected by the authorities and nothing further happened till 1808. Dissatisfied with the costly import of British coal in India, in a letter dated 8th April, 1808; the Director of East India Company stressed the need to explore this backbone of energy within the Indian subcontinent and samples of Birbhum coal were obtained from the collector of Burdwan. But, the British coal producing companies succeeded in retaining their monopoly and the Indian coal was rejected by the British Government for the second time for exploring its potential in smelting for military equipments. The East India Company appointed Mr. William Jones to examine the coalfields and submit his recommendations to the government. In his report, William Jones rejected Burdwan district as a potential mining site. Due to the navigational problem in transporting coal to Calcutta, he concentrated on the Raniganj area.

After the death of William Jones, a coal rush was ensued by many companies and, as a result, there was very hectic mining activity not only at Raniganj but also at Jharia. In 1843, big companies like CarrTagore & Co., Gilmore and Homfray & Co. joined hands to form The Bengal Coal Company, which remained the largest producer of coal in India till its nationalization.

DEVELOPMENT OF COAL MINES

The development of coal mines in India was influenced greatly by the objectives of colonial rulers. In the initial phase, the mining was carried out around the banks of Damodar and Nuniagore rivers, because it was easier to transport it to Calcutta by boats. Mining in the interior region started with the development of Railways. The first geological survey in 1836, and the advent of East Indian Railway, assured the quick development of Raniganj coalfields. By 1860, nearly fifty collieries were operational and producing about 2,82,000 tonnes of coal per annum.

During the 19th century, the Raniganj coalfield was the most important coal producer in India. But, due to the development of additional railway facility in 1906, Jharia coalfields surpassed the coal production of Raniganj.

HEALTH HAZARDS OF COAL MINES

Present status of coal in Indian Economy

Despite the increasing use of petroleum, nuclear and other sources of energy, coal continues to be the backbone of Indian economy. Thermal power plants
are the largest consumers, accounting for half of the coal produced, followed by Railways and steel plants.

The history of coal mining and its subsequent increasing importance shows that the content of tradeable input has increased while the labour content in the total cost has decreased. This is to say coal is costly today not because more expenditure is incurred or the labour force involved but due to high transportation cost and the commissions of the middlemen involved. A popular saying in the coal belt is that "in a year of brokership, a person can earn lakhs of rupees". On the other hand, one year of job in an underground mine yields plenty of diseases, injuries and miseries. The growth in output accelerated during the sixth plan in 1980-85. From the earlier 55 million tonnes in 1960-61, it reached 166 million tonnes in 1986-87 and in 1990-91, touched 211.73 million tonnes. The increase in production of coal however, adversely affected its quality. Large consumers like steel plants and thermal plants complained about the high ash, low cooking qualities, presence of useless material, odd size of coal, etc. The small consumers faced the dual problems of poor quality and sky-high prices, which eventually doubled between 1980 and 1986.

Living Conditions in Raniganj and Jharia

The logic behind nationalization of coal mines lies not only in the reality that coal is a prime source of energy (and on its high domestic reserve) but also in the hard fact of shortage of foreign currency.

One of the guiding principles of modern management is that more production is possible only when there are better working and living conditions, but this very principle is neglected by the coal companies. In all the nationalized mines, there is a gap between the living conditions of workers and officers. While these officers (who are few in number) enjoy well-maintained housing and other facilities, numerous workers live in slums and ghettos.

Housing

Even after nationalization, neither have the new quarters been constructed for the workers nor have the old ones got the necessary repairs. There are a few old one-roomed quarters (without toilets or kitchens) inhabited by a workers family of 4-5 members. There is no sanitation facility and waste water drains run in-between the houses. Asthesedrainages are never cleaned, there is a perennial blockage of water and waste. Workers are free to construct their huts in the area around the mines, but they can be evacuated whenever the management feels like it. No electricity or other facility is provided by the management and there are no schools for the children of the labourers.

Drinking Water

The contaminated water collected from the surface of underground mines is directly pumped in the small ponds made for drinking purposes. In every negotiation, agreement or agitation, workers and their unions have demanded for clean and filtered water, but (till date) no step has ever been taken by the management. An agreement, signed by the Joint Bipartite Committee for the coal industry on 27th July, 1989 at Calcutta stated: "It is reiterated that water supply schemes will be initiated so as to ensure its daily supply in houses. Steps will be taken to ensure that short-term schemes become operational. It will also be ensured that potable water is made available at work sites. Steps will be taken to ensure that filtration plants are operational".

Even today, after three years of signing this agreement, not a single water filtration plant is operational in the whole coal belt of Raniganj and Asansol and the result, unsurprisingly, is a high incidence of water-borne diseases.

Health Facilities

The Kumara Mangalam Committee, which was constituted in 1986 (with no employee representation), recommended the need for proper medical facilities, not only for workplace hazards but also for the life outside the mine. It is the tragedy of coal industry in India that most of the dispensaries and ambulances exist only on paper. "Whenever there is some emergency, we have to look for trucks to take the patient to the main hospital (as there is no hospital nearby). Most of the patients die on the way, even child births take place on the way to the hospital", says Ranilal, a worker. "Even when one reaches the hospital there are no medicines or doctors in these hospitals, and we cannot afford the high bills of private doctors", he added. Year after year, workers have demanded the just implementation of Kumara Mangalam Committee, but they have got nothing more than empty promises from the management. Coal India Limited can maintain a fleet of jeeps and cars for officers, but they cannot afford even a single ambulance (in running condition) for each mine!
WORKING CONDITIONS IN MINES

The Initial phase

Initially, people from all over India constituted the labour force of coal mines. The whole family, including children of all ages, used to enter the mines. From the villages, miners used to come with their families, approximately twice every week for more than twenty hours’ shift. There were no restrictions on their entry and exit from the mines. They were free to smoke, sleep, cook and work whenever and wherever they wanted. There was also no restriction of time in their shift. In fact, they used to dine as well as sleep inside the mine. There were incidents of child birth in the underground mine and the newborn babies were enrolled as the future workers of the company. The company used to pay one Rupee for every male child and eight annas for each female child.

The profit-maximizing tendency of the coal companies and the colonial interest of the alien rulers gradually turned the workers into slaves. No steps were taken for the restoration of the landscape (which was destroyed by the mining) and for the betterment of the workers. The style of mining in India was exactly opposite to the style prevalent in England at that time. Any mechanisation introduced at that time was only to increase the production and not for the welfare of the workers. Outdated and already extensively used machines were reused in India by the coal companies of that time.

"The early form of mining was to quarry the coal from that part of the layer which was visible above the surface. They just dig for a few feet, remove the earth and rocks to get at the coal layer. Gradually, the "seam" went deeper and a stage was reached when it was no longer possible to remove every tonne of coal by using the earlier technique. Coal had now to be taken out in inclines and an element of mechanisation became a necessity at this stage. The gin (pulley) came into existence and coal was drawn by the rope wound around a gin turned by women workers. Later, steam haulages came into existence. When the distance of haulage became longer and the seam had to be worked deeper down, working by shafts and pits came into being and a greater mechanization of haulages became necessary.

In underground mines, except where the inclines were at work, tubs and tramways were practically absent. Women, men and child labourers carried coal on their heads and travelled a long distance to the pit bottom. This kind of cheap labour favoured its extensive use.

Working Conditions - Now

After nationalization, the mechanization of mines (which started during the colonial period) continued in order to meet the large and increasing demand of coal. At present, the depth of an average mine is around 800 to 1500 feet. Electricity has replaced steam engines. Pneumatic coal cutting machines are used in some mines to cut the coal after blasting. There also exists (though, only on paper) the spray system of water. Air exhaust motors are present, but one has to go underground to guide the effectiveness of these systems. Some water spray pipes are left much behind in the working spot. The flow of fresh air is controlled by the use of cloth curtains, but rarely does it reach up to the working spot.

Various functions performed in underground mines

The initial function is the drilling of rocks by the workers on reaching the working spot after getting down the lift. This is done by an electric driller after planting dynamite sticks in the holes that are made in the rocks. After giving a warning, the blasting is done which is followed by the breaking and collecting of rocks. A pneumatic rock cutter is then used to cut the rock. This process is followed by the extension of water spray pipe, air-flow from the exhaust and roofing of the mine. Due to careless and unplanned use of these machines, not only has the dust level increased, but the rate of accidents and injuries has also multiplied.

A visit to one of the coal mines, revealed that none of the health and safety measures were followed by the management. The system to collect underground water is inadequate in the majority of mines. As a result, not only do workers slip and fall but they also develop rashes on their feet. Rubber boots are not provided to them. The flow of fresh air is controlled, with the help of artificial doors and cloth curtains, but it is ineffective in most of the working spots. The water spray pipes, as mentioned earlier, are kept behind, so the working spot. The net result of these two, is a high concentration of heat and dust at the working spot. The health and safety measures are not followed by the management.

The humanitarian step of providing drinking water underground is not taken. The workers work underground for eight hours without a single drop of water to drink. If Coal India can spend millions of rupees on mechanization and to provide facilities for the numerically few officers, why can't it spare a few rupees on provision for underground water? On paper, there is a provision for supplying water bottles to each worker but this is not done, the reason again is shortage of supply.
Accident and Injuries in Mines

The most important cause of major accidents in the underground mines in India is the fall of roofs, sides and entering of water.

Hazards like fire, coal dust and explosion also increase the number of fatal injuries every year. Records indicate that in early days, the manager was not only supposed to be well acquainted with the usual risks, e.g., coal dust, fire, underground water, gas, etc., but was also supposed to have the versatility of dressing wounds, and cuts of fingers of workers skillfully. (MGMU Volume 1Luti. "Early development of coal mining", P.143-144).

The signs of unplanned and blind mining started flashing as early as 1804, when a large area of Raniganj field collapsed and fire broke out in the subsided area in March, 1865. Intense competition among the coal mining companies had made them adopt the cheapest mining methods possible, resulting in serious accidents and a greater loss of human life and coal due to fires and premature collapses.

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of persons killed</th>
<th>No. of persons injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900-10</td>
<td>922</td>
<td>515</td>
</tr>
<tr>
<td>1910-20</td>
<td>1690</td>
<td>1980</td>
</tr>
<tr>
<td>1920-30</td>
<td>2189</td>
<td>3627</td>
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<td>1930-40</td>
<td>2282</td>
<td>7426</td>
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<td>1940-50</td>
<td>2735</td>
<td>13246</td>
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<td>1950-59</td>
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<td>24733</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12531</td>
<td>51559</td>
</tr>
</tbody>
</table>

As the above table shows, more than 12,531 people lost their lives and around 51,559 people were injured in the fifty years of coal mining in India. We are all aware that these are not the exact figures as all the injuries and deaths in all the cases are not reported. There is no record, or count of people dead due to occupational diseases like pneumoconiosis, TB, etc.

The worst part of the whole episode is the non-reporting of accidents to the Mines Inspectorate. This practice started as soon as the Mines Act was enacted and it became a regular feature of mines management after the introduction of safety awards.

There is no facility to warn the workers, before the blasting is done. The most dangerous accident in these underground mines is that of coal dust and explosion, which can be caused by any spark or flame. If there is dust on the floors and ledges it can be whipped into the air by the blast and a second explosion follows. Sometimes explosions travel right through a mine. The only way to stop this is by adopting necessary steps and mechanisms. Anything which causes sparks should not be allowed inside the mines. Proper air exhaust and water spray should be done to suppress the dust on the spot.

Occupational Diseases

Occupational diseases are caused by exposure to harmful chemical and biological agents and physical hazards at the workplace. Although they may appear to occur less frequently than other major disabling diseases, there is a growing evidence that they affect a considerable number of people, particularly in rapidly industrializing countries, like India.

At present, occupational diseases are not only under-reported, but are also wrongly diagnosed and treated. For example, most of the workers whose lungs get affected due to dust, fumes or gases in the under-
ground coal mines, are diagnosed as tuberculosis patients and are administered treatment for the same. Not surprisingly, their condition deteriorates and finally they become victims not only of deadly diseases but also of ignorance.

**The Type of dust Found in Coal Mines**

Coal contains mostly carbon and some hydrogen, sulphur and phosphorous and a variety of rocks, some of which contain free silica. The composition varies from mine to mine and seam to seam. Mixed dust in coal mines may be derived from shale, slate, mafic, grit, koolinite, slate, limestone, etc., all of which are frequently present within above and below coal seams.

Mixed dust formed during coal mining is likely to accumulate in deep mines, specially where mechanical cutting of rock above and below narrow seam occurs. All workers in deep mines, workers in loading and cleaning operations and those in industries using coal are facing a greater risk of exposure.

**Major Diseases found among the workers in underground mines.**

There is a very high prevalence of respiratory disorders among the coal miners. It ranges from occupational asthma, Emphysema to black lung. But, as there is no mechanism for proper diagnosis and treatment, no step has been initiated to check the source of all this.

**Heart Enlargement**

This disease is a manifestation of the respiratory disorder resulting from the non-functioning of lungs due to improper exchange of oxygen and carbon dioxide, i.e., purification of blood. The load on heart increases due to this shortage of pure blood which leads to an increase in its size. “I visited Calcutta for three years, to get a regular treatment, but no more since there is no improvement,” says Kanha. “They have shifted me to a place where I have to do more physical work, which I am unable to do”, he added.

**Occupational Asthma**

Majority of the workers working in underground coal mines suffer from asthma. Unfortunately, it is very difficult to define asthma, in spite of fact that the mechanism involved is known. Asthma is a reversible reduction in the diameter of the bronchial, which (by muscular contraction) hinders the passage of air. This is caused by various agents which are liberated through an allergic reaction, by direct or indirect irritant phenomenon. The major difficulty lies firstly in identifying the source of allergy (as it varies from individual to individual) and also the processes to stop the exposure of the affected person to it. Immunological investigation usually consists of skin test, respiratory test and measurement of specific antibodies. One method is to inhale an aerosol containing the suspected allergic material, while the second method is the contact of one’s skin with the suspected substance. The relationship must be based on two considerations: the occupational exposure and the individual factor.

**Emphysema**

Emphysema may be the end result of pneumoconiosis and can affect a person in the latter part of his life. After a mid attack of chronic bronchitis, emphysema appears as a disease in its own right. Basically, emphysema is the destruction of the allveol. Lungs lose their ability to exchange oxygen for carbon dioxide.

**COAL WORKER’S PNEUMOCONIOSIS (BLACK LUNG)**

A young worker, Radhe Shyaml, lamented about the lung disease, which he was suffering since last six years. “Doctors say it is TB, but why is no medicine of theirs, which I am taking since six years, showing any improvement?” How can medicines of Tuberculosis improve the black lung? Unfortunately, the symptoms of both TB and Black lung are same, and only a few tests can detect the latter. “Only an X-ray was conducted on me and I was declared a ‘TB patient’, says Radhe.

No doubt, pneumoconiosis is quite complicated to detect but actually, what is difficult for a company is to accept the prevalence of it in their mine. For, apart from spoiling their chances for a safety award, it will put a question mark on their so called safety and hygiene measures. Radhe and thousands of other workers in the coal mining areas are tragic victims of management, and lack of awareness. (For details of pneumoconiosis/black lung, see Box)

**What is coal worker’s pneumoconiosis?**

Coal Worker’s pneumoconiosis may be simply defined as the Occupational Disease, caused by prolonged retention of abnormal amounts of dust in the lung derived from coal mining operations. It is principally found among underground coal miners, particularly those with a history of many years of work. Simple pneumoconiosis tends to progress into a complicated
one as the individual continues to be exposed to excessive amount of dust. By progression it means an increase in both size and number of dust foils. If, however, the individual is removed from the dusty environment, the simple pneumoconiotic process appears to remain relatively static (although complicated pneumoconiosis may still develop) and the disease may even undergo a partial regression, unless an element of silicosis is present, in which case, progression in the lesion (after cessation of exposure to dust) is likely to continue.

Though the progress of complicated pneumoconiosis appears inexorable, there is nevertheless a wide variation in the rate of progression. An individual may not exhibit any apparent change sometimes, but a rapid advance may occur suddenly.

**Simple coal workers' pneumoconiosis**

The worker exposed to coal dust with a low level of dust contamination of some other material can be expected to show a sequence of changes as the cumulative exposure rises. At a constant level of low-level exposure, no change can be seen until about the retiring age.

This progression of small rounded capacities is not associated with any physical manifestation but there is a loss of ventilation, although insufficient to produce any disability. It has been difficult to differentiate this from the effects of ageing and cigarette smoking, but there is evidence that the deterioration of lung function may continue at a slightly accelerated rate even after the exposure has ceased. While still working, these men complain of more respiratory disorder than others engaged in less dusty work.

**Complicated CWP**

This describes conditions in which simple pneumoconiosis is complicated by additional pathology. As a group, coal workers do not have an increased risk of TB or lung cancer, although it is probable that men who are exposed to hard rock dust get silicosis as well as what is commonly known as silico-Tuberculosis. The 'complication' usually takes the form of large masses of solid tissue with the parenchyma and its disability. There are three main causes: quartz dust, coal mine dust and dust plus rheumatoid disease.

**Do You Have Pneumoconiosis?**

The first symptom is an unusual shortness of breath, when you exert yourself. It gradually develops over a period that may vary from six months to ten years. Even walking slowly is difficult and exhausting. Your cough brings sputum which may be flecked with blood. You lose weight and your fingernails and the border of your eyes become permanently blue.

Finally, your heart is affected, as is the case with any chronic lung disease. Effects of a failing heart are even more severe: like loss of appetite, loss of weight, shortness of breath and weakness.

So, if you have any of the symptoms listed above, you must contact your doctor or the union activists.

**How to diagnose Pneumoconiosis?**

1. **Blood Gas Test**

Black lung covers a wide range of illnesses, including
several respiratory and cardiac (heart) ailments. The blood gas test measures the level of oxygen in the blood and is among the most reliable tests of black lung. By measuring the amount of oxygen pumped into the blood stream, it is possible to determine the extent of lung damage. Blood gas test is either conducted in resting or in exercising conditions. The latter is preferred as (under exercising conditions) the doctor can determine how the body would react to stress in working conditions. Under this test, a chemical analysis of arterial and venous blood (for examining the concentration of oxygen and carbon dioxide) is done. Blood from artery and vein, is obtained from an arm vein, or by a catheter extending from a peripheral vein to the heart. The blood samples are taken in a heparinized vacuum tube taking care that the specimen is not exposed to the air.

2. Lung Function Test

Assessment of lung function is recommended as a part of the pre-placement and periodic examination of those who are exposed to respirable hazards. The pre-placement assessment may indicate the need for special measures to safeguard the health of the individual concerned. It also provides the basis for comparison of the results of the periodic examination. In the diagnosis of occupational diseases, lung function tests are of particular value in cases where findings of chest radiography are not specific. The tests are also of use in assessing the severity of respiratory impairment and may be of diagnostic value when several conditions co-exist, e.g. obstruction of lung airways or advanced emphysema.

The lung function test is done for an assessment of the following:

(a) the lung volume, which describes the size of the lung.

(b) the ventilator capacity, i.e. the ability to move air in and out.

3. Sputum Test

A specimen of material expectorated from the mouth is taken. If produced after cough, it may contain, in addition to saliva, material from the throat and bronchi. A few precautions are needed to be taken while giving the specimen; and it is the duty of the doctor to ascertain that they are followed.

These precautions are as follows:

- Rinse the mouth to remove food particles;
- Arrange an appropriate collection container;
- Make the patient take a deep cough;
- Collect the specimen early in the morning, prior to ingesting food or drink;
- If patient is unable to produce any sputum then some heated aerosol may be prescribed to induce expectoration;
- Send specimen immediately to laboratory or freeze it.

4. X-ray (Chest radiograph)

Chest radiograph, also known as X-ray, is the most common test done in India for any lung disease. Since 1968, International Labour Organisation has classified X-rays to help doctors in diagnosing pneumoconiosis. In the early stages, small rounded and scattered shadows appear on the X-ray. As the dust burden increases, the shadows enlarge. This is the sign of complicating PNEUMOCONIOSIS.

What Does The Law Say?

Right to refuse work in a dangerous place (Section 22 Indian Mines Act). This section prohibits the employment of a person in a dangerous place. By dangerous place it means the existence of any condition or practice in a coal or other mine, which could reasonably be expected to cause death or serious physical harm. It is your belief that counts and not that of the supervisor. This step can save your life and can be the most effective weapon for enforcing safety and health standard on the job.

Initial and Periodical Medical Check-up

Chapter III. Sec.29 (B) makes it compulsory for an employer to conduct medical check-ups of the employees at his cost. The first is to be done before the person is employed and other periodical medical check-ups after that. It has been observed that no proper medical check-up is done in the coal mines, so you must demand it. It is only through these medical check-ups, that the diseases can be detected early and the employer asked to provide a safe and healthy workplace. (For important checks needed to be stressed upon-see box). Sec. 29 (F) of same Chapter emphasizes that there must be three copies of these reports and these should be sent to:
committee, a memorandum of understanding was signed on 27 July 1987 in Calcutta. Section 54.4 of it says that workmen exposed to heavy dusty condition at the workplace will be provided with dust masks. Employees suffering from TB, Cancer, Leprosy and Paralysis shall be granted paid leave up to six months on the basis of recommendations of company medical officer.

WE DEMAND THE RIGHT TO KNOW —

* When our safety or health is threatened, or might be?
* What kind of health and safety record the mine has?
* What kind of safety and health standards are being observed by the management and government?
* What precautions are being taken to protect the mine?
* What are the production figures of the mine?
* What do the reports of medical examination reveal?
* What kind of citations has the Directorate of Mines Safety been issuing at the mine?

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Stark Realities Beyond The Mist of Fragrance

"Health is a state of complete physical, mental and social well-being, not merely an absence of disease and infirmity." - World Health Organisation.

It has been pointed out that the above definition is not comprehensive, but even by this definition millions of workers are clearly not enjoying good health and they will not be able to achieve it until a mass scale concerted attack is made on the conditions of work that cause not only diseases but also increasing mental stress and disruption of social and family life.

Occupational health and safety issues have, in recent times, as a result of prolonged efforts by individuals and organisations, come to occupy an important place in the struggle for the basic right of human beings - the right to a healthy life.

Though a lot is being done on this front - a lot more needs to be done, particularly in the case of the ubiquitous workers in the unorganised sector.

One such area clamouring for attention is the Agarbatti (Incense sticks) industry. "Agarbatti" needs no introduction in India. Be it a happy occasion or a sad one, a rich household or that of a poor, it is present everywhere.

While Agarbatti fills up our surroundings with fragrance, is enough thought being given to those who envelope others' houses in pleasant smell but whose own houses fail to provide them adequate shelter, whose bodies house a host of diseases and whose quest is - not to lead a good life, but to manage one square - meal a day?

Nagpur is among the top five cities manufacturing "Agarbattis". One of the reasons is the easy availability of raw materials, but the plight of the workers has not drawn the attention of either the administration or that of politicians. The city is a typical example of the contradictions of modern society - pockets of over-crowded and dirty 'bastis' or slums, inhabited by people who have been marginalised by the development process, coexist with high-rise apartments and business houses of the elite.

It is in many of these 'bastis' that around 50,000 males and females in the age group of 5-55 years are engaged (directly or indirectly) in the manufacture of agarbatti. These people belong to different religions and communities, but what they share in common is a life marked by deprivation and characterised by low economic status, low health status, low levels of literacy and so on. The all pervading feature of poverty forces many of them, particularly women and children, to make agarbatti and earn some additional income to support the family. Since agarbatti is manufactured at home, women and children are involved in large numbers.

It would become clear as we proceed that the wages earned by the workers do not bring about any significant change in their living conditions, nevertheless they work because even this meagre amount is indispensable. Women constitute the largest work force because they find it convenient to combine their economic activity with the household work. The hard fact is that performing this dual task takes its toll on their already fragile health.

Work Process

This can be divided into two parts:
(i) Manufacturing dry agarbattis
(ii) Scenting and Packing
It is in the first stage that women and children are involved. The contractor provides the workers with raw materials at their houses and takes back the finished product. The raw materials are - coal dust, wood dust, 'phuskid' (which is a dry powder) and sticks. The first stage is to mix the coal and wood dust with water and make a paste. This paste is then applied on the stick with the help of the dry powder. After this is done, the agarbattis are left to dry in the open. In the second stage of scenting and packing the agarbattis, male workers' involvement comes in. The agarbattis are first dipped in scent, then dried and weighed. After this, they are wrapped in a paper and put in a packet and then they are wrapped with gilletin. The output and wages are calculated in terms of 'gross'. One gross comprises 144 packets of 12 agarbattis each.

Working Conditions

Agarbatti, as mentioned earlier, is manufactured mainly in houses. Most of the houses are one-room tenements inhabited by a minimum of five persons and needless to say, they are not sufficiently ventilated nor is there enough light. Most of the workers do the work in their backyard (if they have one) if not, they work within the premises of their houses and have to bear the brunt of the summer heat. Since Agarbatti has to be dried before they are given to the contractor, summer is the ideal time to manufacture the maximum amount.

In the 25 odd factories (small, medium and big), registered under Factories Act, 1946, the conditions are no better. The workers are not aware of the chemicals being used and they have to sit on the floor while scenting and packing the agarbattis. Further, regular attendance sheet of workers is not maintained with the result that even though a person has been working in a factory for ten years, his name is not registered as a regular worker. There is no workers' union and hence, they have not been able to exert any influence on the management. Any demand for increase in wages is met with the following response: 'we will throw you out'.

Occupational Health Hazards

Any occupation can affect the health of workers both, directly - eg. giving rise to health problems which stem from the occupations, and indirectly - by aggravating the other health problems of the workers.

The workers engaged in the manufacture of Agarbatti are, as indicated earlier, from the lower economic rungs. Therefore, the incidence of malnutrition, anaemia, etc., are quite high. These problems get aggravated due to the work process and conditions.

Let us examine briefly those problems which are directly linked to their occupation. Firstly, the problems related to women who work in their houses. Since this is piece-rate work, they start their work early in the morning and continue till late night. Their work burden is doubled by the labor which they incur in the domestic work and in the production of agarbattis. The wet and cold raw material makes their hands numb. Further, the workers sit on the floor and use a wooden plank to rub the paste on the stick. The sitting posture is incorrect and causes a lot of harm to their health, but as the wages are on piece-rate basis, they continue to work in this manner because they are able to produce more. Sitting in the same position for hours on end results in stiff joints, backaches, numbness of arms and legs and so on. Due to constant bending many experience pain in the neck, head and neck. In fact, it was pointed out by the workers that many young children had developed a hunch back. Constant contact with the Agarbatti masala (paste) has resulted in the peeling off of the workers' skin. Further during summer, when they work in the backyards of their houses, they have to bear the torturous heat, and its manifestation on their bodies in the form of prickly heat, perspiration and other discomforts.

One worker remarked, "not only our hands, but the entire house becomes dirty. We spend a lot of money on buying soap, and a lot of energy on cleaning the house. However much we wash our hands with soap, some amount of dust is bound to remain. In fact, with the same dirty hands, we have to cook and feed our children". So the dust enters others' bodies and causes health problems to them as well. This is another indirect effect of the agarbatti work.

Many women are aware of these health problems. Some say that "we have a lot of time during the day and this work suits us, because we can earn by simply sitting at home". But, in many cases, the woman's wages are crucial to the family - eg. one worker has been making agarbattis for around 15 years and is now a mother of five says: "I worked before marriage to support my parents and after marriage to support my family. After each child's delivery I have started work on the 7th day because I need money and cannot afford to take rest." She, like many others, has several complaints like backache, dizziness, pain in the eyes and head, stiff joints, but she cannot stop working.

This occupation has serious health effects on men as well. The chemicals which are used for scenting the agarbatti cause headache, giddiness and severe respiratory problems - workers frequently complain of tightness of the chest. The packing process which entails frequent contact with the agarbattis leads to peeling off of the skin. Since they also sit on the floor...
and work, they experience constant pain in the neck and back.

It would not be an exaggeration to state that the most affected of the whole lot are the small children. Instead of studying at school and playing games, they are found to be busy playing only one game - manufacturing agarbattis and achieving a good score so that one can earn more money. Children are encouraged in this profession because their nimble hands work faster and therefore produce more. A four-year-old girl says proudly - “I can make 1000 agarbattis a day”. Immediately, an eleven-year-old girl standing nearby responds by saying, “but I can make 5000 agarbattis a day”. Working at an early age has an effect not only on their physical health but their mental health and overall personality development as well. This has implications on the entire society. Their parents are aware of the fact that these children are deprived of their childhood but they have no other option.

Most of the young children enveloped as they are by unhygienic surroundings do not know and even less practice personal hygiene. Thus, not only are their hands blackened by the Agarbatti ‘masala’, one finds traces of it on their faces as well. We are forced to ask the question: “Are these blackened faces a sign of India’s future?”

After all this, let us examine the relationship between the employer and the workers as also between the employer and employee in the factory.

The contractor supplies the raw materials at home and takes back the finished product. While an ordinary agarbatti packet (generally consisting 12 agarbattis) costs a minimum of Rs. 5 in the market, the wages paid by the contractor to the worker is a shocking two and a half paisa per packet. Their wages are Rs. 2.00 or in some cases even Rs. 1.50 per 1000 agarbattis. The wages have no relation whatsoever to the price at which the final product is sold. Further, during the manufacture of agarbattis, some amount of coal and wood powder does not go waste. The contractor admits to a concession of 250 grams (per four Kg.). If this amount is exceeded, then he compensates his “loss” by deducting their wages.

Further, the contractor pays only for the “Quality product” as defined by him, of course, but takes the “Defective” ones as well, he just doesn’t pay for them that’s all.

The conditions of the male workers working in factories are not very much different. Those involved in incising and pecking got only Rs. 38 per ‘groc’ after hours of back-breaking work. Since they have not organised themselves they have not been able to pressurise the management to either increase their wages or provide facilities at the work-place.

The employer, be it the contractor or the factory owner, apart from paying measly wages does not provide any other facility - eg. health, education, etc. None of these factories are registered under ESIS. Actually, for the employees of any factory which is not registered under ESIS, health facilities should be provided by the employer but in the case of agarbatti factory workers, this service is non-existent. Let us now examine the health-care delivery system. For these people, the delivery system can be summed up in one word - “non-existent”. The government hospital is located at quite a distance from the ‘bazaar’. One worker lamented: “If we go to the government hospital a whole day is wasted”, which in effect means, losing a day’s wage. The adage “Time is money” is entirely true in this case. Qualified private practitioners are few in number and they are concentrated in the heart of the city. Moreover, these poor people cannot afford the exorbitant fees charged by these doctors.

The people generally go to the Registered Medical Practitioners (RMP) who administer symptomatic treatment but are not equipped to properly diagnose all diseases and administer the treatment. If there is no RMP nearby, then people go to a nearby medical store and buy the medicines prescribed by the “Shop-owner”.

Many workers are suspected to have Tuberculosis but have neither the time nor the resources to get themselves X-rayed, for a proper diagnosis.

One of the important reasons for this sorry state of affairs in this industry is that the workers are scattered and unorganised. With a view to organise these workers and draw the attention of government and people at large to their plight, Maharashtra Agarbatti Udipiak Kamgari Union has been formed. The union, in collaboration with Maniben Kara Institute (Bombay), conducted a survey on the Socio-economic and health status of the agarbatti workers, in which all the above discussed features were highlighted. The report of this survey was submitted to the State Labour Ministry. The labour commissioner was asked to conduct a general survey of their socio-economic status. Health was not included as it does not fall under their department’s purview.

The government is yet to take concrete steps to improve the status of these workers, either by way of enacting special legislation or by way of introducing special schemes/measures for them. Therefore, the most important need of the hour is for the workers to get organised so that they can demand and get their “due”.
AN APPEAL

"Join Hands to Break the Myth"

Dear friends,

It is a myth that "workers are careless about their health and safety at workplace and do not want to do anything about it. This is not only propagated by the management but it also makes workers and the society to believe this. The time has come for the workers to break such a myth and work towards ensuring health and safety at workplace.

It is now, the urgent need of time to highlight the realities of shop floor for the wider attention of society. Every worker encounters accidents and health hazards in his/her daily work and he/she has developed an understanding to handle and prevent it to some extent, but these efforts are not brought to the notice of people living outside the walls of the production units.

In order to initiate a step towards this goal we are planning to bring out a book, based on your experiences and encounters on this issue. We would like you to pick up your pen and write down maximum 15 pages and minimum 5 pages about such experiences. Kindly provide your write-up in a simple style so that everybody can understand it. This narration should have all the factual information - such as name the of enterprise, nature of raw material used and product, production process, efforts undertaken, period when the effort was taken, etc. You can write in Hindi or in English. It is not necessary that we only attain success in our efforts, but our failures are lessons not only for us, but also for our brothers/sisters who are proceeding in the same direction. So please do not hesitate in writing them also. At the end of your write-up, please write your or your team's name.

Unless we have minimum of fifty such cases, it will not be possible for us to bring out such a book. Hence, if you know someone who can contribute, please ask him/her to write. Your write-up should reach us by the end of Oct. '92.

It is only through our collective effort that we can fight the menace of diseases and disasters at the shop floor.

In Solidarity

Rajesh Pandey
Following are the Addresses of a few Journals on Occupational Health and Safety:

1. Health and Safety At Work
   Pound - 83.00
   Subscriptions Department
   Tolley Publishing Co. Ltd.
   Tolley House,
   2 Addiscombe Road,
   Croydon, Surrey CR9 9EA.

2. The Safety and Health Practitioner,
   Pound - 48.00
   Paramount Publishing Ltd.
   Paramount House
   17-21 Shalney Road,
   Borehamwood,
   Hertfordshire WD6 1RT
   England.

3. Newsletter
   Jo Fells,
   The Editor, Room 506,
   St Hugh's House, Stanley,
   Precinct, Bootle, Merseyside,
   L20 3QY

BOOKS

1. Struggles of Women at Work
   Ed. by Sujata Goshker
   Rs.295
   Vikas Publishing House Pvt. Ltd.
   576, Masjid Road, Jangpura, New Delhi - 110 014.

This volume, which deals with the issues related to struggles of women in their employment and in wage work, is a collection of selected papers presented at various conferences, organised by the Indian Association for Women's Studies. The basic struggle of women revolves around trying to get enough to eat for their families and for themselves and procuring the most basic necessities of life such as food, water, fuel, fodder, shelter etc. As women, they have very little control over the conditions and products of this labour. Thus, not only survival but also their basic human dignity is at stake in these struggles. It is amazing that despite these heavy odds, women continue to struggle - individually or collectively, though in the vast majority of cases, these struggles remain as isolated ones. However, only a few intense and glorious moments of organised struggle by women get documented and known to the world outside the immediate area where they take place. Further, they are looked at or analysed mainly from the point of view of their implications for social change. Their participation in collective struggles is viewed as expressing their involvement in or commitment to the process of this change, and the non-participation in trade-unions as well as political parties are termed as disinterest. In recent times, such a censure of women has been somewhat less severe as there has been an increasing focus on the entire issue of personal and public spheres, and the connection between day-to-day struggles and revolutionary struggles. The subjects covered in this book are - fishworkers, women contract workers of Ennore thermal power station, garment export industry of Delhi, jute, cotton-textile, pharmaceutical industries, air hostesses in Indian Airlines, university teachers, women in trade unions and two case studies from SEWA.

2. Job Losses And Closures:

Management Strategies and Union Strategies

This is the project report of a study sponsored by Asia Partnership for Human Development. The decade of Eighties has witnessed the systematic closure of many industrial units throughout the country. The job losses resulting from such closures and other manoeuvres of employees, leave a cruel impact on workers who have spent their lifetime working in the plant and in painstakingly building a life for themselves and their families. The report is divided into two broad sections - job losses and closures. The first section on job losses includes five chapters. The first chapter is a case study of management strategies regarding job losses in Bombay and Thane. The second chapter is a concrete instance of this strategy in a multinational company - Hindustan Lever. The third chapter discusses the employment situation for women in the organised sector. The fourth deals with the legislation regarding job losses and the fifth chapter argues for a union perspective on future strategies.

The second section is on the issue of closure. The sixth chapter discusses some of the issues involved in closure as a management strategy and the various forces and institutions involved. The seventh chapter is a study of the closure of Karmani Tubes Limited and the long struggle for its take over by the Workers' Co-operative. The eighth chapter is a case study of closure in the Viharabha region of Maharashtra. The ninth chapter is a case study of Stretch Fibre, a company at Nagpur, which faced closure and the various attempts of workers to struggle against the management. The final chapter deals with legally approved mines involved in the closure of factories and companies.
3. "Against the Stream", India's Economic Crisis and Workers Alternatives (by Mukul, special correspondent NBT.) Pages 100, Price - Rs 20.00

Copies Available at: 222 C, Pocket F, MIG Flats, G.T.B. Enclave, Delhi.

This book is an attempt to show that the current, increasingly crisis-ridden Indian economic situation requires a particular concentration of efforts in the part of political movement articulating the interests of the working class, in order to rebuff Indian ruling class's offensive, under the umbrella of World Bank, IMF, multinational companies and the developed countries. Working class and trade unions, in their respective workplaces, are trying to provide viable alternatives to it. However, their struggles are constantly suppressed or ignored by mainstream media. In this book the other takes up the case studies from Central Public Sector, state public sector and unorganised sector, where workers are successfully challenging the problems of industrial sickness closures, privatisation, ruling class oppression and the increase onslaught of new economic policies.

XIIIth World Congress on Occupational Safety & Health (4-8 April 1993 at New Delhi)

The "Invitation and Call for Papers" Brochure giving details about the congress has now been printed in 5 Official languages of the Congress viz. English, French, German, Spanish & Japanese. About 45,000 copies of the brochure are being distributed internationally. The brochure gives all the details and highlights the special benefits which will be provided to Indian participants.

Congress Fees: Rs.3000/- per Indian Participant (before 15th December 1992)
Rs.3500/- per Indian participant (after 15th December 1992)

For details contact:
Congress Secretariat,
National Safety Council,
Post Box 26754,
Sion, Bombay - 400 022.

Tel: 4073285/4073294/4091285
Fax: 91-22-4075937

STOP PRESS

In a study conducted by Jawaharlal Nehru Centre for Occupational Health and Safety, 
Bhubaneswar, Steel Plant on the workers of 
Fertilizer Plant attached to it, many deteriorating 
health effects came to light. This fertilizer plant is designed to utilize nitrogen and hydrogen 
from the steel plant and is one of the largest 
Calcium Ammonium Nitrate producing units. 
The study of morbidity pattern in various sections of fertilizer plant was undertaken. 
Under the 'Medical Maintenance Programme' 
224 persons out of 800 employees attended 
the periodic health check-up on voluntary basis.

Findings

Morbidity prevalence rate due to all causes was highest in nitric acid plant (50.55%), then nitric acid plant (19.44%) and material handling area (14.96%). Upper respiratory tract infections manifested in the form of nose irritation, congestion, cough, sputum discharge, nasal discharge within and away from positive findings in X-ray films and lower respiratory tract illnesses having symptoms of breathlessness, chest pain, mucopurulent sputum. Respiratory illness was 48% among smokers. The prevalence rate of upper respiratory illness was high in ammonia plant. Gas fractionation plant section and P.L.P plant was more in nitric acid plant (22.7%) and nitric acid plant (11.4%) and gas fractionation plant (19%).

Inflammatory eye diseases were more in nitric acid plant and nitro-glycerine plant.

Near compressor gas fractionation plant, refrigeration unit of ammonia plant, and burner of nitric acid plant, the observed values of ammonia were 50.00 and 50 ppm which were much higher than TLV (26 ppm).

Conclusions were drawn due to exposure to gas and local action of fine dust over combustive.

For detail findings see Indian Journal of Industrial Medicine, Vol. 38, March 93, p.29 (No. 1).
GAS LEAK AFFECTS 200 PEOPLE

A gas leak in an Ammonia tank at Central Mexico has affected about 200 people, causing the death of one. Three of the gas-affected individuals were in a critical state of health.

Nav Bharat Times (New Delhi) April 6, 1992.

24 AFFECTED IN CHLORINE LEAK

About 24 persons were affected, six of them seriously, by chlorine gas which leaked from a factory at Awai - Mirzapur Road, about 45 Kms. from Varanasi (U.P.).


GAS LEAK KILLS THREE

Three employees of a paper mill in Sausar town of Chindwara district, about 300 Kms. from Jabalpur (Madhya Pradesh), died instantaneously after inhaling a "poisonous gas".


COLD STORAGE GAS LEAK HURTS 12

Twelve people working in a private cold storage factory in Azadpur Subzi Mandi, New Delhi, were injured, two of them critically, when they were hit by a thick column of ammonia gas after a pipe carrying it burst.


SEWERAGE GAS KILLS THREE

Three municipal workers died on Sunday due to inhalation of a poisonous gas, while clean-
ing a sewerage at Hansi, 25 Kms. from Hissar.


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TWO IN THE GRIP OF AMMONIA LEAK

Two persons, including a 3-year-old girl, were taken ill due to ammonia gas leakage from an ice factory in Sultanpur in North West Delhi.

The Hindu (New Delhi) June 18, 1992.

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CONVEYER MACHINE KILLS WOMAN

A woman worker, Jocelyn Gimoto, 29, of General Milling Corporation, Cainta, Rizal (South east of Manila), dies after her arms and head were pinned by the conveyer machine while at work. This accident happened on 4 February, 1992. According to the victim's co-worker, Jocelyn was reaching for the knife she was using on top of the machine, when her wrist watch was caught by the conveyer. It was so swift that her hand was pulled towards the conveyer and her arms and face were pinned between the machine.


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TWO TONNES OF IRON BAR KILL A WORKER

A 26 year old Stevedore was killed after a spreader bar, weighting more than two tonnes fell on him on March 4, 1992. The victim, Vicente Alata, was employed by United Dockhaulers Inc., under the stevedoring department. He was aboard MV Salicon 9 of Sulpicio lines docked at Pier 12 North Harbour, removing the Van from the lift hook when the accident happened.

As a result, two important issues which were not discussed at Rio in any significant way were the work environment and the growing threat of job losses in the name of environment. It is believed that the environment-consciousness provokes communities to demand the closure of hazardous factories. Very recently in Delhi, the supreme court had ordered the closure of stone crushers to be able to control the dust pollution caused by them. Now, these crushers will be moved to an area where the same thing will be repeated all over again.

At a Global level, the industry is moving to countries where health and safety standards are lower and environmental laws are more flexible, and less stringent. Such moves take place because the lower health and salary standards and flexible environmental laws mean higher profit margins with lower investment. This attractive proposition of moving the factory from one place to the other did not have any moral sanction, but the environmental concern was appropriated by the business houses due to their vested interests. As a result, economic interests, the world over, are trying to project that due to growing environmental activism, thousand of factories with hazardous products will be closed and thousand of workers will be rendered jobless. Even President Bush took the excuse of saving jobs in his country for his inability to sign the biodiversity treaty at Rio. While both, on the streets of Rio and on the lawns of Rio-Centro, citizen groups from U.S. were protesting because 'Bush is not representing the real feeling of the people of U.S.' In this context, it is important to recognize that the reality of job-loss is that it takes place due to the interest in profit and not due to new and safer products. To be able to save the jobs of thousands of workers, who might be losing the risk of losing them, requires a holistic understanding of the issue and a political will. The effort to save jobs will not be undertaken by the free market forces which are always trying to maximize their profit-earning. Hence, this very systematic effort to project the environmental movement as guilty of jobloss is to dissuade the trade unions from getting involved in this issue, because the trade union movement is still capable of putting up an organized resistance if convinced about the cause. Hence, to restrict the involvement of trade unions, it is important to project the environmental movement as the real cause of this growing threat to jobs and not the commercial interest of the enterprise. These misconceptions exist because the 'workers' representatives are missing from the scene, or rather the trade unions have not yet been able to comprehend the seriousness of this summit and the long term effect which it will have on the working class.

The involvement of trade unions should have been there not only because they still represent the largest section of working population; the world over, but also because the perspective of workers is needed to be able to sensitize the environmental movement about the problems of the workplace, which are not only threatening the lives of the workers but also that of the communities. Thousands of workers the world over die every year due to unhealthy work environment, and millions suffer constantly.

Pesticide poisoning, for example, alone kills about 22,000 people every year, throughout the world. The ILO estimates that the total number of accidents at work throughout the world will have doubled from one hundred million a year by 2020. All over the world, if we look at the struggles around environmental issues, these are primarily the issues of survival of the people involved in these struggles. For example in the Chipko movement, the issue which motivated women to come to the forefront was the increasing lack of firewood and fodder. Similarly, in the struggle of Nam Choan Demin Thilliar or Namrada, the villages and agricultural land of people are at stake. In the areas of work environment, there are struggles against coal dust and asbestos (popularity known as black lung movement and white lung movement, respectively). These movements address the issues of workplace pollution and workers' health and well-being. All these movements put forward one point very strongly, that the environmental consciousness of people has been able to take the shape of a movement wherever it has been able to relate to everyday lives and living of the common people. But somehow the environmental movement has been unable to associate with different movements and struggles to improve the workplace environment, i.e. black lung movement in U.S. or movement against asbestos in U.K., etc., while struggles around the issue of dam, forest, air or water pollution have been in the midst of the movement. To a great extent, the responsibility of this lack of involvement of trade unions and workplace issues in the environmental movement also lies with the trade unions. Even today in trade union circles, environment is looked upon more as an issue which is not related with the lives of the workers. While the reality remains that most of the time, the source of environmental pollution lies inside the factory and also affects the workers' health. In fact, both the workers and the communities are suffering because of the 'careless industry'. These industries are careless towards their workers' health, exposing them to dangerous toxic substances, without worrying about their impact and also releasing their toxic waste in the air, water and open fields, without thinking about the degradation of agricultural land, pollution of drinking water or any other environmental impact.

Since the source of pollution lies inside the factories, the workers' participation is needed to come up with the most appropriate solution. In countries like India, where legislations against pollution, hazardous work environment and toxicity do exist (but are not practised), it is imperative that community groups and unions join hands for their effective implementation. It is only through such joint struggles that we can achieve the goal of a healthy environment.