C. B. (II) No. 320.

LOK SABHA

JOINT COMMITTEE
ON
AIR (PREVENTION AND CONTROL OF POLLUTION) BILL, 1978

EVIDENCE

LOK SABHA SECRETARIAT
NEW DELHI
March, 1979/Phalguna, 1900 (Saka)
Price: Rs. 3.00

CORRIGENDA
to
The Record of Evidence tendered before the Joint Committee on the Air (Prevention and Control of Pollution) Bill, 1978.

Page 7, Col. 1,
Col. 1, line 18 from bottom,
for "tremen ous" read "tremendous"

Page 8,
Col. 2, line 8
for "thinking over it Sir, I would"
read "points about the functions of the"

Page 12,
Col. 1, line 4
for "foun ies" read "foundries"

Page 16,
Col. 2, line 33, for "cooting" read "coating"

Page 26,
Col. 2, line 12,
for "upstreom" read "upstream"

Page 29,
Col. 1, line 7, from bottom
(i) for "Export" read "Expert"

(ii) Col. 2, line 3,
for "non-environmental list"
read "non-environmentalists"

(iii) Col. 2, line 15 from bottom
for "TECNESCO" read "TECNECO"

Page 33,
Col. 1, line 3, for "proptry" read "property"

Page 37,
Col. 1,
(i) line 3 for "Dr. SNDERESAN" read "DR. SUNDARESAN"
(ii) line 4 from bottom omit "the"

(iii) Col. 2, line 17 from bottom
for "procdure" read "procedure"

Page 38,
Col. 1,
(i) line 12, for "Sam ing" read "Sampling"
(ii) Col. 2, line 20 from bottom
for "sufficent" read "sufficient"

.....2/-

Page 40,
Col. 2, line 18-19
for "ac-quintance" read "acquaintance"

Page 42,
Col. 1, line 13 from bottom
(i) for "Btu" read "But"
(ii) Col. 2, line 14, for "givin" read "giving"

Page 43,
(i) Col. 1, line 13,
for "Ater" read "After"
(ii) Col. 2, line 8 from bottom
for "contral" read "control"

Page 55,
(i) Col. 2, line 11, from bottom,
for "Memer" read "Member"
(ii) Col. 2, line 23,
for "PETROLEUM MINISTRY" read " AN HON. MEMBER".

Page 57,
Col. 2, line 15 from bottom
for "Bills" read "Bill"

Page 62,
Col. 2, line 2 from bottom,
omit "the"

JOINT COMMITTEE ON THE AIR (PREVENTION AND CONTROL OF POLLUTION) BILL, 1978

COMPOSITION OF THE COMMITTEE

Dr. Karan Singh—*Chairman*

MEMBERS

Lok Sabha

2. Shri P. Anbalagan
3. Shri Manoranjan Bhakta
4. Shri Dinesh Joarder
5. Shri B. P. Kadam
6. Shrimati Parvathi Krishnan
7. Shri M. V. Krishnappa
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Rajya Sabha

21. Shri A. R. Antulay
22. Prof. Sourendra Bhattacharjee
23. Shri Dharamchand Jain
24. Shri Ghayoor Ali Khan
25. Shri Piare Lall Kureel *urf* Piare Lall Talib
26. Shri Lakshmana Mahapatro
27. Shri Prem Manohar
28. Shri Ajit Kumar Sharma
29. Shri Triloki Singh
30. Dr. Rafiq Zakaria

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Shri Y. Sahai—*Chief Legislative Committee Officer.*

LEGISLATIVE COUNSEL

1. Shrimati Rama Devi—*Joint Secretary and Legislative Counsel.*
2. Shri Jagdishwar Narain—*Asst. Legislative Counsel.*
3. Shri Padi Kani—*Attache.*

REPRESENTATIVES OF THE MINISTRY OF WORKS AND HOUSING

1. Shri Mir Nasrullah, *Joint Secretary.*
2. Dr. Nilay Chaudhary, *Chairman, Central Board for Prevention and Control of Water Pollution.*
3. Shri B. V. Rotkar, *Member Secretary, Central Board for Prevention and Control of Water Pollution.*
4. Shri S. T. Khare, *Adviser (PHEE)* .
5. Shri P. S. A. Sundaram, *Deputy Secretary.*
6. Shri J. N. Kalia, *Under Secretary.*

REPRESENTATIVE OF THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

Shri D. K. Biswas, *Principal Scientific Officer.*

WITNESSES EXAMINED

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1	Prof. J. M. Dave, Head of the Department of School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.	1-2-1979	2
2	Shri B. K. Thapar, Director General of Archaeological Survey of India, New Delhi.	1-2-1979	13
	Assisted by : Shri B. N. Tandon, Director (Science), A.S.I.		
3	Shri S. K. Nayak, General Manager, Mathura Oil Refinery Project, Indian Oil Corporation, Mathura.	1-2-1979	19
	Assisted by : Shri V. S. More, Manager (Pollution Control).		
4	Prof. T. Shivaji Rao, Professor in Environmental Health Engineering, Andhra University, Waltair.	1-2-1979	25
5	Prof. B. Sundaresan, Director, National Environmental Engineering Research Institute, Nagpur.	2-2-1979	32
6	Dr. Nilay Chaudhury, Chairman, Central Board for Prevention and Control of Pollution, New Delhi.	2-2-1979	40
7	Dr. B. B. Chatterjee, Professor of Physiological and Industrial Hygiene, Calcutta.	2-2-1979	48
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9	Shri B.B. Vohra, Secretary, Ministry of Petroleum, Chemicals and Fertilizers, New Delhi.	3-2-1979	62
	Assisted by : (i) Shri T. S. Nayar, Adviser (Refineries). (ii) Shri K. Chandrachoodan, Director (Refineries).		

JOINT COMMITTEE ON THE AIR (PREVENTION AND CONTROL OF POLLUTION) BILL, 1978.

RECORD OF EVIDENCE TENDERED BEFORE THE JOINT COMMITTEE ON THE AIR (PREVENTION AND CONTROL OF POLLUTION) BILL, 1978

Thursday, the 1st February, 1979 from 10.30 to 13.00 hours and again from 15.15 to 17.00 hours.

PRESENT

Dr. Karan Singh— *Chairman*

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3. Shri B. P. Kadam
4. Shrimati Parvathi Krishnan
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7. Shri R. K. Mhalgi
8. Shri Govind Ram Miri
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5. Shri J. N. Kalia, *Under Secretary, Ministry of Works and Housing.*

REPRESENTATIVE OF THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

Shri D. K. Biswas, *Principal Scientific Officer.*

WITNESSES

I. Prof. J. M. Dave, *Head of the Department of School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.*

II. Shri B. K. Thapar, *Director General of Archaeological Survey of India, New Delhi.*

Assisted by Shri B. N. Tandon, *Director (Science), A.S.I.*

III. Shri S. K. Nayak, General *Manager, Mathura Oil Refinery Project, Indian Oil Corporation, Mathura.*

Assisted by Shri V. S. More, *Manager (Pollution Control).*

IV. Prof. T. Shivaji Rao, *Professor in Environmental Health Engineering, Andhra University, Waltair, (Andhra Pradesh).*

Prof. J. M. Dave, Head of the Department, School of Environmental Studies, Jawaharlal Nehru University, New Delhi.

(The witness was called in and he took his seat).

MR. CHAIRMAN: Prof. Dave, I welcome you to this meeting of our Committee. At the outset, I have to make one thing clear. In accordance with the provisions contained in Direction 58 of the Directions of the Speaker under the Rules of Procedure and Conduct of Business, your evidence will be treated as public and is liable to be published, unless you desire that all or any part of the evidence given by you should be treated as confidential. Even the confidential part of the evidence will have to be made available to the Members of Parliament, if they so desire. Mr. Dave, you head the School of Environmental Studies in the JNU. You have given us a memorandum earlier. You have now given us a revised memorandum. Would you like to make a statement with regard to this?

PROF. DAVE: Thank you, Sir, very much. It is my privilege to be invited by this august body. I will try my best to share whatever experience I have gained during the last 26 years in the field of environment, particularly in air pollution in India and abroad, both at national and international levels. It will be my humble contribution, if I can be of

any special assistance to this Committee. With these opening remarks, I would like to touch, if you permit me, upon the highlights of this memorandum—instead of reading it. I will present the salient points.

The first and foremost point I had earlier raised in memorandum, and which I would like to raise again in this meeting to-day, is about the functioning and the composition of the Board. The Bill proposes that there should be a single Board i.e. the Water Pollution Board, and this existing Board should be assigned the function under this Bill. Experience in the last 4 or 5 years has shown that there are definitely some major lacuna in the functioning of the Board.

This Board was formulated on the basis of a Bill—with the hearing relating to which I was associated in 1971-72—and it was based on the old, traditional management systems. I believe that a new Board will be more effective. I have already given various reasons also here, *e.g.* the areas of operation of air and water pollution are quite different. Air does not recognize any boundary, but water is confined only to river basins; and you can control it. Air pollution does not recognize political or geographical borders. In a vast country like India, it can travel over vast areas. In the case of water, you can treat it and purify it in a limited quantity, for human consumption; but you cannot purify air. Secondly, we had a lot of discussion in Bangkok on such legislations in developing countries and the working of the various boards in the world was studied. It was thought that the modern management practices should be brought into play in the formation of these boards. We should have a more efficient board, should have an executive Secretary with all the powers and the policy decisions laid down by higher bodies rather than a type of board that we have been having traditionally. Most of the Water Pollution Boards were formed on the basis of the British Act of 1920 and 1922. I think, it is high time that we should take advantage of the development in management particularly in the environmental area and have a more compact and effective boards.

This Bill provides for the Central Board for Prevention and Control of Water Pollution to exercise all the powers under this Bill with regard to air pollution control. My experience is that it will be found from the report itself also that in a few States, there is nothing, no board, but a Secretary, a clerk and a peon I can quote the names of the States if you so desire. The industries merrily go about polluting the system. Such a thing has to be avoided. I was a party to the preparation of the draft Air Pollution Act as a Secretary of the national Committee. At that time, we did not have the experience of the Water Pollution Control Board and we had erroneously had the same traditional format of the board. Now, we feel that we must have a completely different kind of Board. It should be compact clothed with executive powers and should be designed to be functional, effective and economical. I have studied the function and the experience of such Boards in Sweden, Singapore etc. They had a detailed re-analysis of the functioning of the Boards and they have come to the conclusion that it would be more effective to have a small and compact Board with a definitely laid down policy from above. Their functioning would be more of an executive nature. The policy making Board in Sweden is headed by the Minister of Environments.

This Bill says that the present Board for Water Pollution will take over functions for air pollution control also. That means, the present set up will continue. We would have no room for improvement and learning from the experience of the earlier Boards.

MR. CHAIRMAN: This is a very critical point. The scheme of the present Bill is that the Water Pollution Boards will take over the work of air pollution control also, and if I am correct, the amendment that the Parliament passed to this Act specifically provides for this. Is it open to us to make a recommendation that there should be a separate Board for this? I am told, we can.

Now, when you talk of their experience in Sweden, and other countries, do they have a separate Board for this?

PROF. DAVE: In Sweden there is one environmental board and they have two executive directors, one for water and the other for air pollution. In Singapore, there are two separate boards.

MR. CHAIRMAN: Why not have a single environmental board with two separate wings? Why does this not meet with your approval? As an environmentalist, you should welcome integration, but you seem to be arguing for a bifurcation.

PROF. DAVE: I had advocated way back in 1974 for a single environmental board. Here, we are not creating a new organization for air pollution control; we are handing over these functions to the other board constituted in 1974. The Water Pollution Board functioning with all its lacunae and shortcomings will be superimposed on this.

MR. CHAIRMAN: The Water Pollution Act has been passed under a different Article of the Constitution and the Air Pollution Bill is under a different clause. There are certain problems connected with that flowing from the federal nature of the Indian polity.

SHRI TRILOKI SINGH: The Chairman of the Board has to be appointed and he should be a person who knows something about the subject. If the Chairman of the Board under the Water Pollution Act has to act as Chairman of the Air Pollution Board, he may not know anything about the subject of air pollution.

DR. RAFIQ ZAKARIA: As Minister incharge at that time in Maharashtra, I was one of the first persons to have the Water Pollution Act enacted there. Mr. Dave is right when he says that there is no teeth in that Act in the sense that the measures—not only the preventive measures, but punitive measures also—are extremely ineffective. The public sector undertakings—and Bombay is full of them—just do not bother at all. We could not take any action against them. The powers of the State Government in this respect being limited, what Mr. Dave is saying is that if you want the Air Pollution Bill to be really effective, we have to consider seriously whether we should entrust this work to the Water Pollution Boards which suffer from these infirmities.

MR. CHAIRMAN: Under your scheme, a separate Board is asked for. How would you obtain liaison with the Water Pollution Board? I say this because coordination is one of the weakest links in the Government of India. Even within the same Ministry, there is a problem. In the case of Mathura refinery, assuming that it is ever built, air will be going above, into the space and water will be coming down. How do you get this differentiation, *viz.* that the liquid effluents would be under a separate agency, and within 20 metres above you, the air will be under another agency?

PROF. DAVE: There are two issues. Your question, Sir. One is correlation between the two agencies, and the other is the technical aspect of pollution. I will reply to the technical aspect first. The realm of water and air pollution are quite different technically as I explained in the beginning. There may be some industries which may have both air pollution, and

water pollution, *e.g.* in refineries but other industries like the nitric acid plant and the formulation of fertilizers and sulphuric acid manufacture, there are air effluents only and there is no water pollution at all. They may have to be dealt with by both the Board, or may not have it sometimes.

The second aspect is about coordination. In principle, I agree that there should be a common, well-organized agency as is done in many countries. But in our country, the problem is that the Board for water pollution has already been formed and it has certain built-in lacunae. I am afraid they will be transferred here to new boards as we have no way of amending these lacunae as it was enacted under Article 252 of the Constitution. We cannot change the composition of the Board to-day under the Water Pollution Act. Here is an opportunity to form a more modern, efficient management system to tackle air pollution, which will be more compact, economical and functional. Why should we not build on our past experience?

SHRI R. K. MHALGI: Do you envisage membership for non-officials in the Board?

PROF. DAVE: Yes. Instead of having a 17-member Board, there should be only 10 members—a well represented compact body and an executive secretary as with new management techniques. This has been discussed at national and international levels. Why do you have 5 representatives nominated by Government? We can have representatives from public industry, power plants, wild life, forest, agriculture, etc. There should be a new pattern suggested, by this august body as to how the new board should be functional one with executive secretary for better efficiency.

PROF. SOURENDRA BHATTACHARJEE: Why should we not change the composition of the Water Pollution Board, as it was originally stipulated, in view of the newer responsibilities entrusted on it?

PROF. DAVE: I am not fully aware of the legal complications for changing it. May be the Lok Sabha Secretariat can tell us. If there is room for improvement. I am not sure. I think it was passed under Article 252 of the Constitution and the consent of the States has to be obtained for amendment. I think it may not be easy.

PROF. SOURENDRA BHATTACHARJEE: Even though air pollution is not confined within geographical limits a particular state will have to confine its activties within a geographical limit.

PROF. DAVE: I will deal with this separately in other suggestions made late in my memorandum.

SHRI VASANT SATHE: We are now dealing with a Bill which is confined to air pollution. In this Bill we cannot do anything else, even if we want to, *i.e.*, about Water pollution Act because they are the State Acts. So, let us not carry our deliberations into the area of water pollution, relevant though it may be. While making general observations, we can consider the coordination aspect. It is logical then, to my mind, to agree with Dr. Dave that there must be a separate Board for air pollution. It has its own technical aspects as he has explained, and also an administrative aspect.

On this Air Pollution Board, Dr. Dave has talked of representation for agriculture, industry and others. But the main parties concerned with air pollution are the people who are affected. What representation does he visualize for them? I find a mention in the memorandum about municipalities and about the actual notification being made in advance seeking their objections etc. Will it not, therefore, be necessary to have on this Board, *e.g.* people representing or looking after various monuments in the country like the Archaeological Survey of India and others, as well as municipalities and corporations?

I think they should have a major voice in all these matters, because there is a tendency on the part of industries to dominate the thinking and try to play down the effect of pollution, particularly in the field of air pollution because it cannot be detected easily and immediately by the common man. It is a matter for experts. And a new modern expertise is developing. In India, there is very little awareness of this. Unless we educate the municipal bodies about this, I am afraid the composition of the Board will be so overloaded in favour of industries that in effect, the air pollution problem will get not only complicated, but also defused. What are Dr. Dave's views on this?

SHRIMATI PARVATHI KRISHNAN: We are talking about composition. One of the very important aspects of air pollution which, I think, people do not concern themselves sufficiently with, is that in the highly industrialized and urban areas air pollution is therefrom the exhaust fumes of transport vehicles. To ensure that a standard is maintained in this regard, and that it is controlled. Police have a role to play. After all, when these vehicles are seen emitting a lot of gas, it is the responsibility of the transport authorities and the Police. Don't you think that the Board should have some representation from them also? After all, industries are in particular areas, but as far as gas from transport is concerned, it is there in every lane of the country, and it affects the health of the people tremendously, particularly in our country where we find that due to shortage of vehicles, many old and condemned vehicles are put on road, somehow or the other. Air pollution by these vehicles is quite considerable.

PROF. DAVE: Mr. Sathe has raised a very valid point. I totally agree with him. I would like to draw the attention of the Committee to the first report submitted by the National Committee of experts which drafted the Bill in 1972 and of which I was the secretary. We had, in it, qualified medical personnel, meteorological people and eminent civic leaders from the municipalities and corporations and officers dealing with automobile licensing.

I agree with Madam that in India air pollution from automobiles is a very important factor. More than 90 per cent of the vehicles in the cities, according to my survey, were more than 10 years old. New vehicles form 8 per cent or 10 per cent of the moving vehicles. The pollution rate is as high as 15 times that of the normally permitted rate in Europe. Maintenance is poor. Vehicles are over-loaded. when I was in the Government of India, I tried to reduce the exhaust fumes in DTC buses. I agree there should be representation for municipal authorities.

MR. CHAIRMAN: You said you wanted a compact Board. On the other hand, you agree with the hon. Members that all these interests should be represented.

PROF. DAVE: I am for including the representatives of these people. At first, that Board had only 11 members, including these people. In the new composition, 5 representatives were nominated by Government. Why should there be such nomination without identifying them.

SHRI TRILOKI SINGH: The basic scheme of the Bill is that the work of air pollution is to be entrusted to the Board. I find that the Chairman of the Water Pollution Board is a full time Chairman. He is a person who is having special knowledge and practical experience in these things. The same words have been borrowed here.

MR. CHAIRMAN: This has amended in the last amendment.

SHRI TRILOKI SINGH: That person has to be experienced both in problems connected with water pollution and air pollution. My experience is that the municipal authority is an executive body. My submission is that if the Board is to be an effective body, it must have more executive powers than the deliberatively body.

MR. CHAIRMAN: It is a deliberative body-cum-executive body.

SHRI TRILOKI SINGH: How can these part-time members function if they meet once in three months? I would go a step further and say that this body is to be a technical body.

SHRI B. P. KADAM: Is it not necessary to have an effective committee at the district level? I suggest that there should be a local committee under the District Magistrate.

MR. CHAIRMAN: To implement the provisions of the Bill?

SHRI B. P. KADAM: When the local people go to contact the Board officers here and there, the things are delayed. What has happened in Goa about the fertilizer plant where the water pollution is so much? It is difficult to contact the officials at the State level because the industries put a tremendous pressure on them and try to influence them with the result that delays take place. Would it not be worthwhile to have a District Magistrate as its head? The committee would be represented by the taluk board, panchayat as well as municipality, because ultimately the peoples' voice has to be given importance; and they have to be helped in every way.

DR. RAFIQ ZAKARIA: As far as the composition of the Board is concerned, it is really a technical matter. From my experience I find that these industrialists are able to exert a lot of pressure and there are representatives who are not directly responsible to the Government; and against whom for doing certain things, you cannot take any action. Therefore, we should have on the Board only such members against whom you can take action for doing certain things which are not proper.

MR. CHAIRMAN: There are two points involved. One is about the major agencies which are responsible for the implementation of the Act; whether they should be represented or not. The other point is about the municipalities and corporations. If we do it, then there is a danger of the whole being diluted also to some extent. Then it becomes a larger body. Is it possible to envisage a compact technical operative board as the implementing agency and then perhaps either at the district level or divisional level or other level have a sort of advisory group of the consumers and the people who can serve, if necessary. You do not confuse the two things. Is it possible to find out some such structure where you have a small operative body of the advisory citizens group?

SHRI VASANT SATHE: My point is that the Board which is going to have the power of implementing the provisions must not have a dominant hand.

MR. CHAIRMAN: That point is well taken.

SHRI VASANT SATHE: There should be independent technical experts.

MR. CHAIRMAN: There must be some mechanism, some modality whereby the people who are aggrieved are able to feed in their complaints.

PROF. DAVE: There is a mechanicism by which this kind of input could be arranged. Before the Board gives any decision or permission for any particular industrial emission—if it is concerning the population of that residential area—there is a possible

procedure by which it can be provided in a clause that the Board will hold a public hearing.

MR. CHAIRMAN: Do we have a clause holding public hearing? That is a very useful point.

PROF. DAVE: No Sir, as I feel it might also cause delay in the execution.

MR. CHAIRMAN: Shri Sathe has rightly said polluters may also have a say.

PROF. DAVE: About the full time or part time Ghairman of the Boards I strongly favour full time Chairman. To quote present experience of water pollution boards, I may say that there are four or five Boards which have full time Chairman have worked well. For example it is in Gujarat, Madhya Pradesh and other places. We have also some Boards with part time Chairman, but it has never functioned. U P. Secretary used to tell me that he would not see Chairman for three months. Many times Government officers are very busy. They have no time at all to take any interest in the activities.

MR. CHAIRMAN: Assuming that we are going to have separate Boards, should it be separate for each State?

PROF. DAVE: Yes Sir, as it was formu'ated originally, it envisaged two sets of Boards in each State with two Central Board, but I think this draft is not based on it that is why now it is formed like this.

MR. CHAIRMAN: Will hon. members decide to have separate Boards? Are we envisaging a single Central Board or will we have Board for every State?

We were linking it with Water Pollution. That is why we are thinking of State Boards.

That was under 252. This is under 253.

PROF. DAVE: Honestly speaking I have not given deep thought to this issue. The Central Board might be functional and I think it will be more advantageous. But let me say it needs some thinking over it. Sir I would also like to submit that I have given some thinking over it. Sir, I would Board in the draft Bill. First is that the Boards should have the power to prepare schedule of the industry and lay down the standards of emission for them.

MR. CHAIRMAN: Why is it eliminated from the draft?

PROF. DAVE: I am not sure why Sir, but it is necessary. Supposing a Power Plant is to be located in the State, which does not have Air pollution Board. If the Central Board has laid down certain standards, those will be binding on them.

MR. CHAIRMAN: In page 2 of your Memorandum, you say that there are very few trained and capable people. If you are going to have in each State full time Chairman, will we be able to get 30 Chairmen?

There are not very many people even in the advanced countries who are capable of doing this.

PROF. DAVE: There are very few people available today, that is why I recommend functional Boards also we have started the school so that I can train people.

Another point to make is emission from the industrial plant. I do not think that the Government would change the schedule. Why not give power to the Board as it is done in many other countries of the world? Which industries are polluting and which are not polluting, it is a technical matter to be proved. Why should these decisions powers not be given to the Board and be reserved with the Government who will respect board opinion any way?

MR. CHAIRMAN: Government can be suitably represented on the Board.

LAW MINISTRY REPRESENTATIVE: Licences in the State are issued by the State authority. The Central Government cannot do in this matter. Such of the industries which are under the Central Government, the Central Government can delegate this power to the Board.

SHRI VASANT SATHE: If you have a Central authority and if by a Central Law there is a condition that any licence to be given to any industry either by the Central authority or by the State will mean 'no objection certificate' from the Air Pollution authority or the Board, then that will apply only to the State as it will apply to the Centre while granting the licence or regulating the industry.

PROF. DAVE: There is a lot of force in saying that we should have a central authority, but unless we get the cooperation of the State Governments, full implementation is not possible.

DR. RAFIQ ZAKARIA: If you locate the Central Board in Delhi, you should have a very mobile Chairman who is not fond of sitting in Delhi all the time because action has to be taken promptly.

PROF. DAVE: Probably my viewpoint has not been properly understood. The industries have to be classified. We do not have the manpower to take care of all the industries. So, we would like to take action on the most toxic and dangerous industries first. So, the board must issue a list of industries and say that these are the most toxic industries and they need action first.

SHRI VASANT SATHE: Suppose you classify certain industries as polluting industries. The pollution caused by a particular unit may be negligible by itself, but if there are a cluster of such small units together, the effect of pollution will be substantial. A particular unit may say, 'The gases that come out from my industry are negligible and therefore, a no objection certificate should be given." So, you may give a licence to that. Like that hundreds of units may get the licence each independently.

PROF. DAVE: That is a valid point. Air quality standards have to be laid down for each region and if the standard goes below that level, the board will have authority not to allow any more industries in that region.

My next point is the authority by the Central Government to create inter-state air pollution zones. This was earlier raised by honourable member. India is a federal country. Delhi is a typical example where air pollution does not recognise any boundary. It travels along with the wind a hundred miles this way or that way. So, it may be necessary to create inter-State air pollution zones as is done in Australia, USA, West Germany, etc. In Delhi you have a concentration of industries from Rohtak to Ghaziabad and Faridabad and if you take action within the boundary of Delhi, you will not succeed. So, the board should have authority to create inter-State air pollution zones for effective action.

My next point is, consent of municipalities should be obtained. There is a provision like that in many European countries, in hillippines and Malaysia. The reason, is, you may issue one set of standards, but the municipality may feel it is not enough and a stricter standard should be enforced.

MR. CHAIRMAN: I thought it may be the other way round. The municipalities may want to attract industries and therefore may inisist on less rigid standards.

PROF. DAVE: That can also be true Sir, in such situation in countries like Belgium and Germany, there is a provision to invite objections from local residents whose houses may be located within a 50 metre radius of

the proposed site of the factory. Such a provision may also be considered. This may counter act such a municipal action.

Lastly, this Bill is named Air Pollution (Prevention and Control) Bill but I do not think any power or any mechanism is provided in the Bill for the board to take preventive action. In Europe and America the boards have a say in the land use Plan from the beginning so far as location of industries is concerned. For example, Delhi is having an industrial estate and north westerly winds are minimum in winter months. In that case, it can be laid down that in certain areas no industries should be allowed to come up. This is called preventive action.

PROF. SOURENDRA BHATTACHARJEE: Regarding laying down of standards, there has been a debate. Do you want that the same standard should be applied to the same industry all over the country?

PROF. DAVE: Zones should be divided into categories in which they can have different standards. For example, if one thermal power station is located, say, hundred miles from Udaipur or Jodhpur, for ten years you can have liberal standards, but in a populated area it has to be stricter.

MR. CHAIRMAN: It is not the standard for each industry but it is the totality of the pollution in each area. Therefore, the same industry located in Kashmir may have a different standard from the same industry located in Trombay.

There is one point which is not directly connected with the Bill as such but it is a point which has roused a good deal of interest in public and that is the vexed question of Mathura Refinery and Taj Mahal. It is one of the great monuments of mankind and it has become a symbol of threatened environmental pollution and lot of heat has been generated. Do you have particular views on it?

PROF. DAVE: About Taj Mahal, you have put me on the spot. I had been associated with the Committee from 1970 onwards. Actually, the first objection ever raised was by me as Adviser. The report came to me that they were planning a refinery at Mathura and at that time, I had prepared a detailed note on that. In that note, I pointed out the possible impact on Taj Mahal and the alternative sites suggested by me were Itarsi, Aligarh or Tundla.

MR. CHAIRMAN: Instead of going into the past, would you please tell us, what do we do now?

PROF. DAVE: I was a member of that Committee and in August, 1977, I resigned from it because it was rather manipulating the facts. We do not have meteorological data or wind frequency even of five years nor do we have the temperature data available. I do not think that anybody can positively say that Taj Mahal is safe. As far as air pollution is concerned, as a matter of fact, the people there have never done this kind of field study in their lives. There are many expert groups in the United States with whom I had consultations. They said that there could be no guarantee that Taj Mahal would be safe. I personally believe that there is no concrete data available to tell conclusively that Taj Mahal will be safe from the refinery emmission.

DR. RAFIQ ZAKARIA: Reverse can also happen. Why do you presume that Taj Mahal is not safe? You say that you don't have any data. But if it is available, reverse can also happen.

PROF. DAVE: Yes Sir, this may be true but the circumstances of wind pattern, new industrial growths with it make it unlikely. Also whatever damage Taj Mahal has suffered has come about in the last ten or fifteen years only. It was probably due to the location of power plants there, because there was air pollution earlier. So this should have been rectified first before new sources are added to the area.

Thre are also certain data available; that the refinery would be discharging a certain amount of sulphur di-oxide,

which is a known fact. Secondly, though it is not hundred per cent reliable, there is one pattern that will transport sulphur di-oxide upto 40 kg. near Taj. This data is not sufficient to tell that there will be enough dilution or there will not be higher concentration; probability therefore is for higher concentration for three or four hours. Taj being near the Jamuna, there will be more humidity and it may go up to 60 per cent. So, marble will be definitely affected. The expert committee's estimate report is 65 mg. in a year. This is enough to damage the Taj. That is one positive conclusion that I can draw.

MR. CHAIRMAN: What about the Agra pollution as such? The Mathura refinery has not come into being. All the damage that has been done so far to the Taj has been done without the Mathura refinery. That means that there is already a lot of pollution activity around Agra, which has damaged the Taj, which cannot be blamed on the Mathura refinery. The whole Committee has gone to Agra and studied the situation. We have noticed that there are a lot of local industries, particularly, foundries, railway marshalling yards, and an anti-diluvian thermal plant. It was suggested that if firm and drastic measures are taken to remove them, then there would be an automatic drop in the pollution around Agra and any additional pollution that may come from the refinery will not have any impact. What is your view? If Taj is deteriorating, it is a matter of great concern, quite apart from the Mathura refinery.

PROF. DAVE: We are not looking towards the protection of Taj only for the next 50 years or 100 years but 500 years or more. Secondly, the local pollution by the power plant, railway marshalling yard and the foundries would come to short term concentration of 65 mg. in winter. When the refinery is commissioned, it will add another 65 mg. So, air pollution will be doubled. Regarding drastic measures on existing units will of course, it will be political decision, a Government decision and a scientist cannot give any opinion. I am only giving my logic. It is also to be considered how can we prevent pollution due to the natural growth of Agra. The foundries are small cottage industries which have been flourishing for long, it is rather the birth-right of those people to carry on their profession. It will also affect a large number of people. On the other hand, if we shift the refinery, it will solve all the problems.

MR. CHAIRMAN: As a scientist, why are you soft to the local population? Pollution is bad, whether it comes from the Mathura refinery or from Agra city. How are you dividing it into two categories benign pollution and malignint pollution? For pollution both are equally bad.

SHRI A. R. ANTULAY: I think we are doing a little injustice to Prof. Dave. If I have understood him correctly, it is not as if he is saying that the Mathura refinery should be shifted and nothing should be done about local pollution. He is only saying that it would be different to deprive the local people of their profession and further its impact would be very negligible, whereas the effect of the Mathura refinery would be to double the pollution. Perhaps, the inference is that while we cannot avoid the local pollution we can at least avoid this.

MR. CHAIRMAN: But let us assume the Mathura refinery is not there. Even then the Taj is still deteriorating.

DR. RAFIQ ZAKARIA: According to you, what is the extent of the pollution by the local population and what would be the addition of pollution by the Mathura refinery, when it comes into being

PROF. DAVE: In my recent article in the *Illustrated Weekly* I have explained that there is sufficient pollution to cause concern, so far as Taj is concerned, due to local factors. The local action to protect the Taj should be to take steps to help reduce this pollution. As you have stated, Sir

the most rational approach would be to take immediate steps to shift the power station, the marshalling yard and the foundries from the city. But, if we are ont able to do it and on the other hand, bring a massive load of pollution from outside it will aggragate the situation.

MR. CHAIRMAN: Your point is well taken. You have stated that the people who have done the survey were not really competent to do so.

PROF. DAVE: The consulting firm have no experience of such surveys. Further, they have not undertaken a study of the impact of sulphur dioxide from a distance, anywhere in their country or elsewhere.

MR. CHAIRMAN: Do you think it is useful to have another group of experts to look into this problem or do you think that, as far as you are concerned, the matter has been proved without any further necessity of going into it?

PROF. DAVE: There are two points. First in seventy years of Committee work we have met only six or seven times. If we appoint a second Committee, it will take another five years and by that time the refinery would be completed, if no action is taken immediately.

SHRI VASANT SATHE: Then our Committee will fall into a very serious trap, if we do not take note of the fact that for the last seven years, right from the beginning, particularly from 1973 onwards, repeated objections have been taken. At that time only land was acquired, worth about Rs. 3 crores or 4 crores. And when objections were taken, they said: All right, an expert committee is going into it." While the expert committee was going into it, they did not stop further expansion. They went ahead, made further investments so that a *fait accompli* is presented to the country, to thes Parliament and to the Committee. They said: 'Look, now we have spent so much. Now it will be futile to think of shifting and therefore, you must consider the best way of avoiding or minimising this pollution which modern technology or science can do, and therefore, another expert committee will be appointed to go into it and we have this 'committeology' which goes into this.

DR. RAFIQ ZAKARIA: The expert committee itself was bogus.

PROF. DAVE: We had presented our viewpoint to the Committee and my opinion is also accepted abroad. I have just finalised the programme with the Middle-East Director in charge of pollution. If we can advise others. I don't think that we need more experts and the present expert Committee could have taken into account all the viewpoints that were presented.

MR. CHAIRMAN: Thank you very much, Prof. Dave. Your assistance is very valuable.

DR. RAFIQ ZAKARIA: In case we can't do anything about the Mathura refinery and it goes into action, how long do you think it will take before the Taj is completely disfigured?

PROF. DAVE: May be 50 to 100 years, but if steps can be taken to reduce pollution from the Refinery, but it can be prolonged a little but it will be at an exhorbitant cost. I had given about it earlier in my submission to the Ministry, I do not want to come out with all the figures, but it would be something like Rs. 20 crores to be spent for the control of the pollution from the Refinery.

DR. RAFIQ ZAKARIA: Rs. 20 crores capital expenditure?

PROF. DAVE: Rs. 20 crores plus they should acquire another 5 or 6 kilometer belt of land about one kilometre south of the Refinery and construct orest round the Taj Mahal on the northern side and this is a very expensive proposition. All it can do is to reduce the danger to the Taj Mahal but not protect it totally.

MR. CHAIRMAN: How much it can be brought down?

PROF DAVE: It can be brought down by 5 or 10 micrograms.

MR. CHAIRMAN: Thank you very much, Dr. Dave.

(*The witness then withdraw*)

II. Shri B. K. Thapar,
Director-General of
Archaeological Survey of India
New Delhi.

Assisted by:
Shri B. N. Tandon
Director (Science)
ASI, New Delhi.

(The witness was called in and he took his seat)

MR. CHAIRMAN: Before we proceed, may I draw your attention to Direction 58 of the Directions by the Speaker which reads as follows:

"58. Where witnesses appear before a Committee to give evidence, the Chairman shall make it clear to the witnesses that their evidence should be treated as public and is liable to be published, unless they specifically desire that all or any part of the evidence given by them is to be treated as confidential. It shall however, be explained to the witnesses that even though they might desire their evidence to be treated as confidential such evidence is liable to be made available to the Members of Parliament."

MR. CHAIRMAN: Mr. Thapar, you have given us a note on the Agra monument and in that you have summed up what has happened, but you have not given any recommendation. Why is it that the ASI is fighting shy of making clear the recommendations with regard to Mathura Refinery. At the end of your note, what do you say? What the Committee would like to know is, what is the considered view of the ASI.

SHRI THAPAR: I would like to submit that I do agree that in the note which I submitted to you last time, we had not given our recommendations, but during the discussions with the Expert Committee, we had all the time been making it clear that we would not like the Refinery to be located at Mathura. Our recommendations in short would be three fold: (a) the location of the refinery from its present position be shifted, (b) there should be some sort of mandatory orders for the shifting of the existing contributory factors of the pollution *viz.* the power plants, the marshalling yards and the foundries; (c) in view of the disputed nature of the findings of the Technico and others, we are of the view that a body of International experts on Environmental Engineering should go through the Reports.

MR. CHAIRMAN: Your suggestion is that the refinery should be shifted. If that is your suggestion, where does the question of an International body of experts going into the Reports arise?

SHRI THAPAR: I do agree that if the first two parts of our recommendations are agreed, then the third one does not arise.

PROF. SOURENDRA BHATTACHARJEE: What do you mean by "mandatory orders for shifting the existing pollutants"?

SHRI THAPAR: There are three existing pollutants—thermal power plants are there, two of them, about 300 foundries and the marshalling yards are there. The marshalling yard is under the Railway Ministry. The power plants are with the Government of UP and the iron foundries and local industries which are coal based are under the control of the UP Government. From the Centre, I feel, that there should be some sort of instructions, there should be some sort of effective means so that these two things which are in the purview of the State Government are shifted.

MR CHAIRMAN: Apart from the Taj, are there any other monuments in India that are likely to be affected by pollution? Apart from Agra, anywhere else in India?

SHRI THAPAR: It is going to be a problem even at Elephanta because there is a refinery near about.

MR. CHAIRMAN: At Elephanta, is it going to be affected by the industries that are already there or by the new refinery that is planned?

SHRI THAPAR: We have not as yet measured air pollution level at Elephanta. Considering that the same factor would apply, we apprehend that the problem would become apprehensive.

MR. CHAIRMAN: Some hon. Members have expressed and I did also that we would have expected that the ASI, to whom the upkeep and maintenance of these monuments has specifically been assigned, would really have raised this problem. Why is it that the ASI simply seems to be reacting whenever somebody else makes noise rather than taking the initiative? Surely it is your responsibility. It so happens that there may be environmental minded scientists who are launching a crusade. You have not studied it in Elephanta. Is it not a rather negative and disappointing attitude on the part of ASI?

SHRI THAPAR: I would like to submit in respect of this how the ASI did take the initiative. As soon as the decision to locate the Mathura refinery at Mathura was taken, we did apprehend all these problems and in fact we asked the NEERI to undertake these surveys or investigations. The ASI was not fully equipped to undertake such surveys. We asked them to do it and they did it. After that, we have all along been fighting it. I certainly agree that we have not made a big noise about this problem through public media.

MR. CHAIRMAN: In the ASI do you have any Cell or any particular Division dealing with air pollution?

SHRI THAPAR: After the Expert Committee's report was submitted, we felt we must have a small Cell, and we have located one at Agra. We have also a Laboratory at Dehra Dun where we are going in for some sample tests. In the meantime we have done some sort of test of the affected parts of the monuments at Agra and Delhi. We have imported some equipment and are getting some equipment indigenously for evaluating the measure of air pollution.

SHRI VASANT SATHE: There was some news item that there is a modern technique of coating these monuments with some plasting type of thing which retains the look and, at the same time, protects the monuments from these pollutants. Is any such thing possible for monuments like the Taj?

SHRI THAPAR: As you have rightly said, there are some chemicals like polymelon, cynamide, dynacelon etc. We are experimenting with them. But before we apply them on a permanent basis we have to see that any applicating or coating of the chemicals does not affect the stone. Secondly, it should also be reversible so that, supposing that it is deleterious to the stone, it can be removed. During the last few months we have tried polymelon acetate etc. and the new thing which is now being experimented is called dynacelon.

SHRI VASANT SATHE: Have you also given thought to one fantastic idea of having a glass dome around the Taj or such monuments?

MR. CHAIRMAN: There was once a suggestion that the whole of New York City should be put under a huge dome.

SHRI VASANT SATHE: Modern technology is thinking of all sorts of things. It may sound fantastic today but, if about Rs. 400 crores to Rs. 500 crores are to be spent on a refinery, if for about Rs. 50 crores or less a glass dome could be raised around the Taj, probably it could be protected from all the air pollution.

Have you given thought to such an idea?

SHRI THAPAR: We have not worked out the details or the cost factor of such a thing but I would think that this is not an easy solution because there would be the factor of humidity inside, unless you make it absolutely air-tight. This should be tried only when all other things fail.

सभापति महोदय : अन्दर गये तो बेहोश हो जायेंगे, इसलिए बाहर से ही देखते रह जायेंगे ।

SHRIMATI PARVATHI KRISHNAN: Coming back to the point about preservatives, you have said that you are carrying out some experiments on the spot. But, supposing it harms the stone of the monuments? You have said it is not yet known whether it is reversible or not.

SHRI THAPAR: Firstly, we are applying the preservative in small areas on the spot.....

SHRIMATI PARVATHI KRISHNAN: But you do not know yet whether it is reversible or not.

SHRI THAPAR: We will be knowing it within three to four months.

MR. CHAIRMAN: What the Hon. Member means is that if this is only an experiment, would it not be wiser to conduct the experiment elsewhere rather than at the Taj because, in case it is not reversible, nothing can be done about it.

SHRI THAPAR: We are taking samples of some parts—some sort of cuts—and finding out from the samples whether there is any trace of their being affected by the sulphate already in the atmosphere.

MR. CHAIRMAN: Has there been any result yet?

SHRI THAPAR: I must say that so far we have got a trace of sulphate and we are trying to find out whether there are other elements.

SHRI TRILOKI SINGH: Have these chemicals been tried elsewhere or are you trying them for the first time?

SHRI TANDON: They have been tried elsewhere and it was said they are reversible. A British firm which has recommended the material to us has said it is one of the finest.

MR. CHAIRMAN: They have tried it out in Italy it seems.

SHRI TANDON: Yes, and in England also. A problem arose when we tried another material, but they have said this is a better material which is now available with them. We are trying it out both at the site and at the laboratory.

SHRI VASANT SATHE: You know that in the Taj there are fine carvings and inlay work etc. So, apart from the marble part, can these also be coated without damaging the real beauty and lustre of the inlaid work?

SHRI THAPAR: They can be coated because we are doing it by the spray method, we are not applying it with a brush.

श्री वसन्त साठे : कोई भी चीज हो, चाहे हीरा हो, अगर उसको स्प्रे कर दें तो क्या उसका लस्टर बना रहेगा ?

श्री थापर : वह एक्सपेरिमेंट हम कर रहे हैं, ताकि कोई शोन न आये ।

श्री वसन्त साठे : मैं समझता हूं कि चाहे किसी भी तरह का स्प्रे किया जाये, चाहे वह कितना भी पतला क्यों न हो, मार्बल के इनलेड वर्क पर उसका कुछ असर जरूर होगा । अगर वे स्प्रे से सफा कर रहे हैं, तब तो ठीक है मगर वे तो कोटिंग कर रहे हैं । साफ करने की बात नहीं चल रही है ।

श्री थापर : पहले तो हम साफ करते हैं और फिर कोटिंग करतेहैं ।

SHRI TANDON: All the preservatives which we are using are transparent in nature. They will not change the colour. The colour will always remain the same.. If we use 0.5 per cent, no one will be able to find out whether any change has taken place. The ideal preservative is one which does not change anything, which will be only a kind of very thin layer.

SHRI VASANT SATHE: How long will it last?

SHRI TANDON: For about ten years.

SHRI VASANT SATHE: After ten years, you have to give another coating?

SHRI TANDON: We remove that coating and give ancther.

MR. CHAIRMAN: It is now a well established practice. The ancient monuments and statues cannot simply be allowed to deteriorate. There are certain chemicals within the stones themselves. So, the cleaning up of monuments is a well accepted fact. It has been done in Brihadeeswarar Temple and also in Ajanta and Ellora. Even in Italy, to preserve the great works of art, there is a constant process of cleaning. The new development is, after cleaning, if possible, to apply or spray a transparent preservative; that preserves it from further deterioration without in any way adversely affecting its artistic quality. This is now a well established technology. All that they are trying to do is to apply that technology on a huge monument like the Taj. This is my understanding.

PROF. SOURENDRA BHATTACHARJEE: The Archaeological Survey of India is responsible for the preservation of the monuments. This problem of pollution has been there even before. The public awareness is of recent origin. As a specialised body, what did the ASI do in this respect? Apart from Taj, there are so many other monuments like the Victoria Memorial in Calcutta. Calcutta is a city where the pollution factors are quite strong. Has anything been done to maintain its beauty?

Regarding Taj Mahal, I want to ask this question. Has this coating been tried to foreign countries? A specific answer has not been received. Have you examined those instances where it has been applied and were any difficulties evidenced in the use of these coating? Have you gathered this information so far as using these coatings is concerned?

SHRI THAPAR: About the second part whether we have got the evidence to prove that these recommended chemicals or preservatives have been applied on monuments in other countries, I must confess that we have not got any report to say that these have been applied on monuments, say, in Italy or in Athens where a lot of marble has been used. But, as my colleague has said, the firm is manufacturing it; and the possible assumption is that it must be manufacturing after a lot of experiments. They have recommended that this is a preservative cuoting for marble which they have tested at various places.

MR. CHAIRMAN: We can always test. If there is a new product that has been produced, we do not have to wait for many years till it is tested in Athens or Italy We can test.

PROF. SOURENDRA BHATTACHARJEE: A certificate from the firm is not enough. I was only trying to find out whether they have any precedents to go by—any precedents in other countries.

MR. CHAIRMAN: What was your first question?

PROF. SOURENDRA BHATTACHARJEE: What has the ASI, as an organisation responsible for the preservation of ancient monuments,

done in this regard? It is not a question of Taj alone. There are so many other monuments. I have cited the instance of Victoria Memorial.

SHRI THAPAR: The only explanation I can give about this is that, as far as environmental or atmospheric pollution is concerned, it is only during the last 10 or 15 years that we have become alive in this situation—that something can happen through atmospheric pollution also. Otherwise, ASI, as an organisation, is certainly entrusted with the task of preserving the cultural heritage of this country, and we have done our work in a modest way or grand way, whatever it is. We had always felt that the reasons were, largely, the ageing factors. The idea that such things could occur through atmospheric pollution also, I must confess, is only about 15 years' old.

DR. RAFIQ ZAKARIA: I want to know from Mr. Thapar whether under the law, his organisation has effective powers to prevent this kind of deterioration as a result of air pollution or other ways. My own feeling, as far as this organisation is concerned, is that they are not very effective; a lot of deterioration of monuments is taking place: there are also a lot of delays taking place where prompt action needs to be taken. In view of this new danger of pollution, I would like to know from Mr. Thapar what are the weaknesses in his organisation, in what way he would like to be armed with powers, so that these monuments are properly protected and preserved. As you know, these monuments are—great works of art as far as our country is concerned and we cannot trifle with them. The ASI is now only a limb of the Education Ministry with very few effective men and control all over the country. They will have to be very vigilant in view of this new danger of pollution. And I do not think you have teeth in your organization or the powers to be really effective. If I am wrong I will be very happy.

SHRI R. K. MHALGI: Is there any cell in your Department to study this atmospheric pollution?

SHRI THAPAR: As far as the cell is concerned, as I just now pointed out, we have for the last 2 months already created a cell working. We have got some staff which are working on this.

As far as the present Act is concerned, which is called the Ancient Monuments and Archaeological Sites and Remains Act of 1958 does not have any powers, any clauses to the effect that we can stop any industries coming about. It is only under some section that we can declare certain areas as prohibited whereby you can control that a certain mining operation should not be done or any such thing. That would only be with reference to a protected site. I cite a small instance. At Baroda there is a site called Champaner which is on a hill. Nearabout that hill a lot of quarrying operations were going on under a contract. We thought by quarrying there would be some sort of tremors caused. So we declared that area prohibited. That is the only power that we have under the Act. After we could declare an area protected, or prohibited the quarrying operations could be stopped.

We had a similar problem in Sravanabelagola where some quarrying was going on. The land was not ours. Ours is a small monument or a little bit of the area.

Whatever we have notified in the earlier times. But under the Act with reference to a monument the contiguous land could be declared as prohibited area whereby such activities can be stopped.

DR. RAFIQ ZAKARIA: There is so much of theft taking place and I think they have been helpless about it, I know even in Daulatabad a lot of things are still continuing.

MR. CHAIRMAN: In Nalanda there was a major theft.

DR. RAFIQ ZAKARIA: Taking advantage of this thing we may say that unless they are really armed with necessary powers, most of these things cannot be stopped.

I want to know whether apart from the powers that we give to the Board, we also say that you are not sufficiently armed so that you may be able to take certain action . . .

MR. CHAIRMAN: Perhaps a general recommendation may go. It is not directly under the Act. A paragraph conceivably could be added pointing out particularly the role of the Archaeological Survey of India . . .

DR. RAFIQ ZAKARIA: We may recommend that that Act also should be suitably amended giving Archaeological Survey of India whatever further necessary organizational powers it requires.

SHRI THAPAR: There is no limit. The limit is the workability.

As far as the power is concerned, the ASI sometimes feels very helpless. Whenever modern development schemes come up specially in big towns like Delhi and other places where the land does not belong to us, we cannot possibly purchase the land near the monument, we cannot purchase 500 sq. metres because the land is very costly. At best 40 metres or 50 metres around a monument we can have as a protected limit. Beyond 40 metres or 50 metres when the development schemes come up and high rise buildings come up we have no power to stop them.

MR. CHAIRMAN: We are going slightly off our main subject. We are dealing with pollution. But the point Shri Zakaria made was whether in the light of the new threat of pollution of which we have now become aware, strengthening of your organisation either by amending the Act or in other ways is being done or whether you think it is worthwhile for our committee to make some recommendations to this effect.

SHRI THAPAR: I would submit that the committee make a recommendation to that effect. We can take up the amendment.

DR. RAFIQ ZAKARIA: Already there is a provision that when any industry comes up unless they produce a no-objection certificate from the Water Pollution Board, the licence is not granted. Similarly in the case of any industrial development which is likely to take place nearabout monuments, some kind of a no-objection certificate from the Archaeological Survey may be insisted.

MR. CHAIRMAN: That is a possibility.

SHRI TRILOKI SINGH: Certain monuments are under the care of the State PWD, *i.e.*, the State Executive Engineer. There they wake up after much damage has taken place to the monuments. This has happened in case of the Taj. If somebody makes a report, then only the Archaeological Survey becomes aware of it and then they issue a notice. Cannot you take action before any damage takes place?

SHRI THAPAR: As far as the ASI is concerned, it is responsible for the monuments which are declared to be of national importance. All other monuments which are not of national importance are looked after by the respective State Departments of Archaeology.

Some of the State Departments of Archaeology are adequately equipped to take up preservation of monuments while others are not, particularly, with reference to the preservation of monuments in the sense that they do not have qualified conservators. So, what they do is, as you rightly pointed out just now, that they delegate the power for preservation of monuments to the PWD. PWD engineers are certainly qualified engineers but then there is a subtle difference between a civil engineer and a conservator. What sort of restoration he will

do and upto what limit he will restore and upto what limit he will preserve?

With regard to the first part of the question which you raised, as I pointed out earlier, we have taken some samples which have given us evidence that the sulphur di-oxide is acting on the marble.

MR. CHAIRMAN: Thank you very much, Mr. Thapar. We will keep in touch with you.

In the afternoon we are meeting at 3 o'clock when the General Manager of Mathura Refinery is coming.

Prof. Shivaji Rao wants to show us some slides. I was wondering whether the Lok Sabha Secretariat could make the arrangements.

PROF. SOURENDRA BHATTACHARJEE: Can we have a joint sitting of Mr. Nayak and Prof. Shivaji Rao?

MR. CHAIRMAN: Let us see. First of all, I was wondering whether some photographs could be temporarily taken so that we could have a little projection.

DR. RAFIQ ZAKARIA: I think we should hear the General Manager of the Mathura Refinery afterwards. We should hear Shri Shivaji Rao first.

MR. CHAIRMAN: According to programme, the General Manager is giving his evidence first and then comes Shri Shivaji Rao. Do you want to reverse this order?

Let both of them be together. Anyway we meet at 3 o'clock.

(*The Committee adjourned at* 13.00 *hours and reassembled at* 15.15 *hours*)

M. Shri S. K. Nayak, General Manager, Mathura Refinery Project, IOC, Mathura.

Assisted by:

Shri V. S. More, Manager (Pollution Control).

(*The witness was called in and he took his seat*).

MR. CHAIRMAN: Before we proceed, may I draw your attention to Direction 58 of the Directions by the Speaker which reads as follow:

> "58. Where witnesses appear before a Committee to give evidence, the Chairman shall make it clear to the witnesses that their evidence shall be treated as public and is liable to be published, unless they specifically desire that all or any part of the evidence given by them is to be treated as confidential. It shall, however, be explained to the witnesses that even though they might desire their evidence to be treated as confidential such evidence is liable to be made available to the Members of Parliament."

MR. CHAIRMAN: Let us start. We have with us Mr. S. K. Nayak, General Manager, Mathura Refinery Project and Mr. V. S. More.

Mr. Nayak, we met you in Mathura and we had some discussion with regard to the Mathura Refinery in respect of Taj. Subsequently, the controversy has deepened and the Committee has been given a great fund of argument in favour of shifting the site of the Mathura Refinery. Not only the environmentalists, but also the Archaeological Survey of India have now moved on to that position and made a clear recommendation that the site should be shifted. We are gravely concerned with this. This morning, we had some experts who pointed out that the existing level of pollution in Agra is already high, and even if attempts are made to take some steps there, and even assuming that those are successful fully—which is unlikely—the additional burden on the air pollution situation that will necessarily be caused by the Mathura Refinery is something which should be avoided, in the long-term interests of our national heritage.

You have already given us your views. If I remember correctly, when you met us at Mathura you said that

you were considering certain anti-pollution methods to bring down the pollution. Is there anything that you would like to add to what you have already said, or should we ask certain questions in this regard?

SHRI NAYAK: I think whatever measures we have taken, and are going to take, and other measures that would be available in case pollution level has to be reduced further—have been placed before you.

MR. CHAIRMAN: Prof. Dave said that there were certain fairly extensive anti-pollution measures which might cost us about Rs. 25 crores which, if taken, could substantially reduce the pollution, although even then he did not think it should be there.

SHRI NAYAK: The anti-pollution measures we propose are basic measures, in the sense that we are trying to limit the source of pollution, and not control it, after they occur. At the present moment as per calculations, we have said that on the basis of using low sulphur fuel and sulphur-free gas, we can limit the emissions of sulphur di-oxide which is being talked about as the main pollutant, to less than 1-tonne per hour.

MR. CHAIRMAN: Somebody talked about 65 micrograms.

SHRI NAYAK: There are two parameters in air pollution. One is the emission, and the other is the air quality on account of emission. When I said emission, it is the total amount of sulphur di-oxide which will be emitted from the various effluents stacks or chimneys from the refinery. As a result of this emission, on the basis of mathematical models which have been normally used everywhere and as is done by the studies made by the Indian Meteorological Department, the average annual concentration of sulphur di-oxide at Agra on account of the emission of 1-ton of sulphur di-oxide per hour from the refinery would be of the order of 1 to 2 micro-grams per cubic metre.

MR. CHAIRMAN: Of course, it will be much higher in certain periods of the year.

SHRI NAYAK: It could be. It has been said that during winter months, the dispersal of pollutants is generally difficult. Normally, the temperature gradient is—the higher you go, it is cooler; but in winter months sometimes the ground gets cooler quicker, with the result that the upper atmosphere temperatures are higher. When the upper temperature is higher, whatever is emitted, tends to settle down till the temperature gradient goes up and dispersal takes place. It has been established by the Indian Meteorological Department that it could occur 2 to 4 per cent in the winter months. The wind directions then forwards over Agra could be of the order of 18 per cent to 24 per cent. Both of these, occurring at the same time, is a rare possibility. And even if it occurs, it has been estimated that at that time it could be the short-time concentration. It can be about 63 micro-grams for half-an-hour. But this is theory. During this particular period, the wind's velocity is generally low; and there will also be a certain amount of mist and fog. At that time, the scavanging of these pollutants, particularly sulphur di-oxide, as it goes through this, has not been taken into account.

MR. CHAIRMAN: The Committee is very gravely concerned about what will happen to the Taj as a result of this refinery. There seems to be an element of uncertainty in the calculations because these are hypothetical figures based on mathematical models etc. So, there is no assurance that the situation will not be worse than is expected. Once a refinery is set up, it

goes on for ever; and the Taj will also be constantly menaced. I am aware that a certain amount of money has been spent. How much money has actually been spent so far?

SHRI NAYAK: Upto December, it is about Rs. 100 crores—on the refinery side. On the pipeline side, something more has been spent.

SHRI VASANT SATHE: How much on civil construction, and how much on machinery? Will you give the break-up?

SHRI NAYAK: I don't have the figures at the present moment. Broadly, the land cost is about Rs. 1 crore. Buildings—mostly foundations etc. have cost Rs. 10 crores to Rs. 15 crores on civil works, which are all underground.

MR. CHAIRMAN: We visited some of these buildings.

SHRI NAYAK: Those are buildings for office and so on. The rest of them are foundations, sleepers and other things. The remaining part is equipment, materials and connected works.

SHRI VASANT SATHE: Mr. Nayak, can you tell me any valid reasons in this regard? Suppose even if we think that there is a ten per cent chance or one per cent chance of Mathura and Agra monuments being affected adversely today or tomorrow or 50 years hence, and so the refinery has to be shifted from there, what basic objection can you have?

SHRI NAYAK: This is a matter of decision and I think I have no authority or competence to take a decision or to put objections.

SHRI VASANT SATHE: Technically what objection can there be?

MR. CHAIRMAN: If he is ordered by an order of the Government of India saying, shift it to Trivandrum, for instance, he would shift it to Trivandrum. That is all. As a civil servant he would obey the order.

SHRI VASANT SATHE: My question is somewhat different. Technically what difficulty is there? If machinery is there.

MR. CHAIRMAN: It can be shifted elsewhere.

SHRI VASANT SATHE: That is why I asked a question. I wanted to know the details. Construction of buildings would itself amount to about Rs. 80 crores. Those buildings are only for a particular type of work. Therefore it would have created problems when you think of shifting those buildings. That is why I asked that question. If it is Rs. 15 crores and mostly foundations, we can think of it. In regard to feasibility purposes, I would again raise this question, whether today there will be any technical difficulty or any practical difficulty with regard to shifting, if this has got to be shifted? I am not talking of any theoretical thing.

SHRI NAYAK: If I understand you right, the question is, what are the implications in case the decision is taken to shift this refinery.

MR. CHAIRMAN: That will depend upon where it is shifted.

SHRI VASANT SATHE: That is why it is not Trivandrum. When I say, U.P. I know why the decision was taken. That is why I said that. The decision was taken because it must be at the consumer's point, in the North.

MR. CHAIRMAN: Let me concretise the issue. A suggestion has been made that it could be shifted with advantage to Etawah or in the direction of Etawah and the existing buildings there could be used for storage and for transport and distribution requirements so that the existing buildings are not completely wasted. That is the point made. There are number of components during the distribution stage, during the storage stage and so on. One suggestion made is this that the actual polluting units may be

shifted away from Mathura, to Hathras or Etawah and the existing buildings and services could be used for other purposes connected with the project. How would that be technically looked at by you?

SHRI NAYAK: Irrespective of what use we can make of whatever the existing facilities are, when the refinery complex is shifted, we have to shift all the total facilities provided.

MR. CHAIRMAN: Can this not be bifurcated to some extent? One expert said that it can be bifurcated.

SHRI NAYAK: In refinery operations we have the storage tanks. I am giving it as an example. We do have tankers. In the case of these refineries the storage is meant for operation flexibility. Suppose one particular product is getting delayed the entire refinery need not be shut down.

MR. CHAIRMAN: That is an internal affair. That is not a major storage problem.

SHRI NAYAK: It is one thing if we can have it at a small distance where you can have a pipeline and utilise the existing tankage facilities.

MR. CHAIRMAN: It has been stated roughly that about 80 to 85 per cent of the investment has gone towards what are called equipments. We therefore would assume this. If the site is shifted those equipments can also be shifted and used in the new place.

SHRI NAYAK: Let me say this. When I said, equipment and machinery for example 20,000 tonne capacity of tanks is under construction and we have completed about 10,000 to 12,000 tonnes of these constructions. We have taken up construction of other things. We have got to dismantle it if we have to shift. We have to completely transport it there.

MR. CHAIRMAN: Would this be within the 15 crores or 85 crores?

SHRI NAYAK: 85 crores. I will give you the implications of shifting. Site-selection is the first thing. We have to think of the availability of water supply. We have to think of availability of suitable place for effluent discharge, availability of communications, etc. Availability of power and other aspects and the speed with which we can acquire them, cannot be predicted. Thirdly, the equipment has been erected, the structures have been put up and most of the critical vessels are over-sized.

MR. CHAIRMAN: I recall that Aligarh and Etawah were the two alternative sites which were considered earlier apparently from the point of view of pollution to the monuments and the population. Aligarh and Etawah will give total protection to the monuments. Last year a decision was taken to shift it to Aligarh or Etawah. Now if we go to one of these places how much utilisation we will be able to do

SHRI VASANT SATHE: Now, there are two important places on the river bank. Apart from these two rivers, is there no place where you can discharge your effluent without affecting the historical places, the devotees of Mathura and other people?

SHRI JAGDISH PRASAD MATHUR: At first, it was suggested that Sawai Madhopur may be selected. But the Government took the decision to have it in Mathura keeping in view some points.

MR. CHAIRMAN: There are certain parameters, certain pre-requisites which are there. Let us hear Mr. Nayak on this point.

SHRI NAYAK: The question is about the total time that has been taken to come up to this level. Now the point is that you have already spent a certain amount on this and whatever you have got to spend to

recover and reuse it. But there are other factors, for example, what is the effect on the total economy? Now, this is something which off-hand I cannot say.

SHRI VASANT SATHE: Have you any idea supposing we were to reconstruct the Taj, how much will it cost?

SHRI NAYAK: Now, the necessity for a refinery in the North-West region was on account of the fact that the demand for petroleum products is so much that after 80's we cannot meet it by present transportation manner which we are doing and that is why it was necessary to have a refinery somewhere in the North--West region preferably near Delhi. This was the recommendation of the first feasibility report. The Government then asked us if for some considerations Delhi is not suitable, any alternative location between Agra and Delhi, of course as far away from Delhi as possible, can be suggested. Then, on certain technical considerations, Mathura was chosen in 1972. As it is, apart from other reasons, the present shortage of diesel and kerosene would have posed problems in future. Even if the products were available, the question of transportation would have posed problems. If we decide to shift the refinery—I am not competent in this matter—it would mean, anything between three and four years further delay. Selection of site, availability of water, transport, acquisition of land are all problems for which nobody can put any time limit.

MR. CHAIRMAN: How long has it taken you to bring the refinery to the present stage?

SHRI NAYAK: The actual construction started at site in the November, '76.

MR. CHAIRMAN: That means, two years and three months. Even if you give one additional year's lead for planning, you cannot possibly lose more than 3½ years.

SHRI NAYAK: We may lose more than that, because the project report . . .

MR. CHAIRMAN: You do not have to do everything again. Surely, the work that has been done in finalising the plan etc. will not have to be done again.

SHRI NAYAK: It will have to be done depending upon the site.

MR. CHAIRMAN: But the basic scheme of the project is not going to change. You design a five-star hotel, you can build it at Delhi or at Hyderabad.

SHRI NAYAK: It is not that easy. The entire plan will depend on the particular size of the area etc.

MR. CHAIRMAN: Apart from the money, there will be a loss of time between three and four years.

SHRI VASANT SATHE: Will the size of the tanker change because of the size of the plant etc.?

SHRI NAYAK: It can change because of the soil considerations. Because of the availability of space, we have gone in for an 18 M high tanks depending upon the soil condition. If the site has to change, soil investigations will have to be done and it may take a long time.

MR. CHAIRMAN: What were the other sites considered?

SHRI NAYAK: The recommendation for setting up of the refinery was made after taking into consideration all the implications and it was decided to consider sites near Delhi, Hissar, Agra and Sawai Madhopur. Subsequently, the possibility of locating the refinery in MP was also considered. Various sites were considered from the point of view of techno-economic reasons. The data was submitted to the Government and it was examined by the usual bodies of the Government and the final decision was taken in June, 1972. Whatever I say is not based on my expertise, but on

what I have gathered from others. This must be understood.

MR. CHAIRMAN: Mr. More, what is your contribution to this?

SHRI NAYAK: Let me explain. Mr. More is, of course Manager, Pollution Control; but after the importance attached to pollution control, myself and the management took a decision that there will be a separate pollution control cell in each refinery, as well as at the head office. Mr. More has been there only for the last one year.

SHRI MORE: I am in this position for about 2 years, working for pollution control. Before that, I was working for 10 years in various disciplines in petroleum refining. When a decision was taken that we should have a pollution control cell in the IOC, I was given enough opportunity to go abroad for training, and for visiting other institutions in India and abroad, I have got sufficient background of it. Of course, I cannot claim that I am an expert in this field, there are many experts who have explained the position. Secondly, I was associated with the Mathura refinery which has its own pollution control measures. The training I had, was not only with Indian experts, but with some foreign experts who were involved in these studies. A lot of discussion was there about various theories. There were many consultations with Indian and foreign experts. But I am not an expert.

MR. CHAIRMAN: Do you have any particular views on the problems we have discussed?

SHRI MORE: As a chemical engineer, I have some views, after spending about 12 years in refineries in operation. Some of the experts have apprehensions about the refinery. Petroleum refining is a simple process, refining crude petroleum into products which are used by everybody. Basically it is a distillation process. Since I was working in shifts for quite a few years, I know that the first lesson given to any operator or any engineer in the refinery is that in cases of emergency you run to the furnaces and stop the burners. If there are power or steam failures, we have to run and stop firing while we burn fuel in our furnaces, everything else, is a closed operation, because we are dealing with liquid products which are highly inflammable. They are contained in closed containers and then stored in tanks. But the heat energy required comes from the fuel gas which we burn in the furnace. It is our major source of emission. When an emergency comes, basically the emission will come to zero, because our engineers will rush to the furnace and stop the burners. We have automatic controls also. Practically, everything is based on the need for safety.

Since fuel to furnaces is cut off, there is no emission from the refinery.

SHRI VASANT SATHE: In normal working, when you burn fuel through chimneys, is there no normal, regular emissions day-to-day?

SHRI MORE: There is emission. We have estimated that it will come to less than 1-tonne per hour of sulphur dioxide.

MR. CHAIRMAN: That is the average that you were taking for the whole year. Even then, it is quite likely to create certain pollution problem. It has been suggested that with the additional expenditure of Rs. 20 crores to Rs. 25 crores, it is possible to substantially reduce the sulphur dioxide emissions. Have you studied this aspect at all in detail?

SHRI NAYAK: There are two processes which have been commercially put into operation after some pilot plant studies. These processes are at the present moment being utilized for reducing the sulphur dioxide from fuel gases in the stacks. The approximate efficiency of this is about 80 per cent to 90 per cent, provided a certain amount of high concentration is there.

They are used for bringing emission from a high level to a low level, which is achieved by using low sulphur fuel.

MR. CHAIRMAN: It is a questionable estimate.

SHRI NAYAK: If we put in this process also, we will not get 90 per cent reduction. We may get 60 per cent, or 50 per cent reduction. The other aspect which arose last time, is that even if it is 40 per cent, why should we not do it? I will summarize how this problem has been tackled. One is to see what is the minimum you can achieve by adopting a very simple method i.e. to what extent you can reduce emission by controlling things at the basic point. The second one is our estimate of contribution to the Agra area and the present level of Agra area; the present condition of the monument and historical background. Now in Agra at east the annual average of sulphurdioxide is about 15—20 microgramme per cubic metre and this historical thing has been there for the last many years. These are contributed by some foundries, power stations and a railway shunting yard. With all this, it has been found that there has been no effect on marble which can be accounted or directly attributed to sulphurdioxide.

MR. CHAIRMAN: The Director-General of Geological Survey has confirmed that it had been found. It is no use arguing that a great deal of pollution has taken place already without the refineries. Obviously it has. But the real fear is that with the pollution that already exists, even we are not able to reduce it to some extent. If you add a source of pollution permanently, it would be undesirable in the broader interest of the monument. Lot of doubts have been expressed. We are at a stage where there is no definite stage and a lot depends on the way in which certain problems are looked at.

(The witness then withdrew)

IV—Prof. T. Shivaji Rao Professor in Environmntal Health Engineering, Andhra University, Waltair.

(The witness was called in and he took his seat).

MR. CHAIRMAN: Before we proceed, may I draw your attention to Direction 58 of the Directions by the Speaker which reads as follows:

> "58. Where witnesses appear before a Committee to give evidence, the Chairman shall make it clear to the witnesses that their evidence shall be treated as public and is liable to be published, unless they specifically desire that all or any part of the evidence given by them is to be treated as confidential. It shall however, be explained to the witnesses that even though they might desire their evidence to be treated as confidential such evidence is liable to be made available to the Members of Parliament."

You have worked for the last several years with regard to this porblem of the Taj. You have submitted us your memorandum and a supplementary memorandum also. I have seen this book that you have sent me. Your views are well known. Would you like to say anything more besides what you have stated in your memoranda?

PROF. RAO: I have been a specialist in this field of Environmental Engineering. I graduated from the Rice University, Houstin, a city that is very famous for a number of oil refineries. We have been studying the refinery pollution problems rights from that time of 1962. In most of the developing countries, the problems of pollution are increasing at least in some areas on par with those of the developed nations. When oil resources are found at a particular place in land normally people try to take it to the sea front in order to see that the emissions which necessarily create both air pollution and water pollution

will be taken care of by an environment. Where a large volume of pollution water is available in the sea, while some marine life runsaway from pollution, people are prevented from suffering its adverse consequences which ultimately lead to cancer of the lung and intestinal trait. Even the progeny will be affected. In case of Mathura Refinery, we are trying to pump oil over a distance of 1300 KM from Bombay High and are trying to locate a refinery in an area which does not have enough environmental carrying capacity. We are trying to locate it exactly at a location which is most unsuitable, because the wind direction from the Mathura Refinery is predominent only towards Agra. This work on wind speeds and directions was done over a period of two years by Mr. Barkat Ali Khan during 1924-25. He observed reading every hour and found that particularly during winter the wind blows only towards Agra and was having a high velocity with the result that emissions from the refinery are just directed towards the city of Agra to a very large extent. Now the recent study on travel of pollution made in Europe as well as in America indicates that the places at long distances are more seriously polluted than those close to the sources of pollution. I agree that a certain degree of pollution can be tolerated in the case of human beings; but in the case of monuments like Taj Mahal which is made of marble even traces of sulphurdioxide cause damage. Once sulphurdioxide or nitrogendioxide or carbondioxide is released into the atmosphere, by the industries, the gas immediately affects human beings and plants. Even as a gas, it affects that monument only after it has been transformed into acids I went deeper into this when I was in Stockholm for an international symposium. I discussed this problem of physiochemical fate of pollution with some of the top international experts like Prof. Bert Borlin, Paul Crutzen, Ehrenberg and Ehran Berg and Dr. Barry Commoner. Those people also confirmed that pollutants it travels beyond 15—20 miles downstream and become dangerously corrosine to marble. Moreover, during winter, the surface air movement over this region forms part of the anti-cyclone lower air movement over Northern India and consequently tends to bring down the pollutants along the Yamuna Valley to Agra. If this Refinery is located about 30 miles down-wind of Agra, I would have said that it is not dangerous to the monuments. But due to its siting upward of Taj and upstreom of Yamuna, its liquid effluents let into Yamuna cause water pollution of the drinking water which on chlorination will gradually kill millions of people in Agra. I have published one book entitled "Save Taj Mahal and people of Braj Mandal". The IS suggested that they had to conform to IAS 2490 standards for letting out the purified effluents. The I.O.C. plans to confirm to these standards by spending a few crores on waste treatment. But there are limitations even for the sophisticated technology. If they are going to spend all these crores and still not get the desired standards under I.S. 2296, I will not be satisfied because it becomes a serious public health hazard. The pipeline of the refinery falls into Yamuna river and that river is used both for bathing and drinking water. So many people use it. Hence even the best water pollution control technology cannot ensure the safety of the river water as the river is not only already seriously polluted but also its dilution capacity dwindles very much in summer. Past experience indicates that most of the industrialists cannot maintain even the I.S. 2490 the standards—not even 5 per cent. Even assuming that it is going to happen in case of Mathura Refinery still it will not satisfy the welfare and public health aspect as discussed in the book I have written.

MR. CHAIRMAN: It is the question of the health of the people. Was it known in 1972?

PROF. RAO: Yes, it was known.

MR. CHAIRMAN: You have said—by shifting the refinery by 50 miles

down-stream of Agra it is possible to prevent both loss to the monuments and also loss to human beings.

You say 20 miles. It means, perhaps, some of the structures that are already put up at Mathura can be used as a part of general complex for storage, marketing and so on. Could you give a little more detail on this point?

PROF. RAO: Actually some of the structures can be put to alternate uses if the infructuous expenses were to be fair enough.

The wind rose indicates that winds from south east, do not affect the monuments and people of Agra.

MR. CHAIRMAN: How will the health hazard be obviated?

PROF. RAO: It is because of dilution water provided by Gambhir and the Chambal rivers that the polluted water of Yamuna gets more diluted. In that way you do not expose 1 million people to the carcinogenic effects of pollution.

The villagers downstream of Etawah being lesser in number, can be shifted to alternative places if necessary. Even Etawah can be supplied with drinking water from the lower Ganges Canals.

MR. CHAIRMAN: There will be dramatic result if we shift it 50 miles down-wind of Agra.

SHRI VASANT SATHE: What about the effect on fish?

PROF. RAO: The water pollution will have some effect on fish. Certainly there will be more damaging effect on monuments and a large chunk of population because of air pollution. The drinking water supply of Agra will also be affected besides the adverse effects on agriculture bird life, cattle and wild life of Braj.

MR. CHAIRMAN: Has this been worked out in some detail? Can this statement be substantiated?

PROF. RAO: This can be inferred from the data on pillution of Yamuna water, already published by the National Environmental Engineering Research Institute, Nagpur in 1965-66. In fact one of my papers on this subject, published in the Journal, Chemical Age of India, August 1978 high lights the impact of acid rains and short term concentrations of pollutants on the flora and fauna of Braj Mandal.

MR. CHAIRMAN: Were these things considered at the time of selecting the site?

PROF. RAO: No, Sir.

Nobody with any common sense could try to locate a highly polluting factory at such a place which is going to poison many people and kill them. Perhaps, Hitler would not have ventured to commit such a serious crime even inadvertently against innocent people.

MR. CHAIRMAN: Without ascribing any motive, at that stage the decision was taken with inadequate appreciation of the environmental factors. We do not want to get involved in politics. I am sorry I am obsessed with the question of site. If it shifted to a down-wind site close to Agra, it is to minimise the effect both to the Taj and Agra.

DR. RAFIQ ZAKARIA: After listening to Prof. Rao, we should be convinced that the selection of site was made on other factors.

MR. CHAIRMAN: Every positive factor should be mobilised to take the decision.

SHRI VASANT SATHE: Etawah is 80 miles from Mathura. Hathras is 20 miles. If it is moved to Hathras, all these problems can be solved.

PROF. RAO: No Hathras is to the North of Agra, and the wind rose indicates that we have to shift the refinery to a less risky site towards the South East of Agra. Hence Ferozabad, Etawah region only is suitable.

SHRI VASANT SATHE: Mr. Nayak, you were talking of the need of having a refinery for the north. Is it true that for this refinery you will be bringing the crude by pipeline from Bombay High and from Kandla if it is imported crude? May I know whether through pipelines you can also transport other products like refined oil etc.? If that is possible, the only problem for distribution will be storage points. In the north you can have storage tanks from where you can distribute to all areas. But the refining could be done where the crude is available nearby near the seashore where effluent discharge, wind direction, etc. could be taken care of without in any way affecting the interests of the consumers in the north.

SHRI NAYAK: Certain products like diesel, petrol, kerosene, etc., can be transported by a single pipeline in a particular sequence. But for furnace oil, we should have another pipeline. Bitumen cannot be transported by pipeline at all. LPG is too costly to be transported for long distances. This refinery is also to supply heavy feedstock for two or three fertiliser plants and these feedstock canont be transported by pipeline. They are quite solid at normal temperatures.

SHRI VASANT SATHE: How much furnace oil is required in the northern region?

SHRI NAYAK: It is very considerable. The present estimate is we propose to produce about 340,000 tonnes of furnace oil at Mathura refinery.

SHRI VASANT SATHE: Supposing, for all the four products and the two products, the feedstock for fertiliser, furnace oil and LPG there was no separate pipeline and if these things are to be transported in a normal way, what would be its effect on the economy? Did you make any study like that?

SHRI NAYAK: I believe this must have been worked out.

SHRI VASANT SATHE: When the Mathura refinery was envisaged, the Bombay High had not come up. They were thinking of importing the crude. Even from economic point of view I do not feel that there is really a very valid case for having a refinery at a distance of hundreds of miles from where the raw material is.

MR. CHAIRMAN: For this if necessary, we can call the officials of the Ministry of Petroleum and Chemicals.

In your view, by shifting the refinery to Etawah which is 80 miles away, this problem will be solved.

PROF. RAO: Yes.

MR. CHAIRMAN: According to you, Mathura is the worst possible site in the North from archaeological, cultural, spiritual, material, health and every other point of view.

PROF. RAO: Yes.

MR. CHAIRMAN: Will you kindly show us the slides now?

(At this stage, slides were shown to the Members of the Committee).

PROF. RAO: I am now projecting 25 slides to show how Taj Mahal is going to be slowly but surely destroyed within 20 years due to pollution from Mathura refinery and its multiplier effects. Since seeing is believing, I request you to kindly see the pictures of centuries-old monuments and statues of sand-stone and marble which got blackened and disintegrated during the past 30 to 70 years due to air pollutants in the industrial atmosphere of U.S.A. and Europe. This first slide on Taj Mahal shows that the North-West portion is slightly discoloured due to air pollution from existing foundries and thermal power plants of Agra. The wind-roses based on 16, 366 hours of observations during 1924-1925 indi-

cate that predominant winds from North-West carry the pollution from the refinery towards Agra in Winter, towards Bharatpur in the season of bird-migration, and towards Mathura during pre-monsoon period. The very high relative humidity, the channelling effects in valleys, the extreme temperature fluctuations, and the frequent atmospheric inversions during winter and the dust-storms in summer make this site for the refinery as the worst possible choice, particularly when the crude is being pumped from a distance of 1300 kilometres from Bombay.

This UNEP poster of 1978 on stone-cancer to the granite pillar, cleopatras 'Needle' indicates that in spite of their best air pollution control technology even the Americans failed to prevent disfigurement of the Western face of the monument. This pillar which was in tact for 3500 years in Egypt, had to yield during the last 70 years to air pollution of New York. This slide on decay of Greek monuments shows that the wonderful marble works of art which stood the wrath of nature for 2400 years became blackened and disintegrated during the last 30 years due to air pollution from industrial developments around Athens since the second World War. The other slides show the accelerated decay of monuments at Cologne, Venice, Rhur and Stockholm due to air pollution and the consequential corrosivenesss of the local environment. If the present site for the refinery is not shifted from the upwind direction, Taj Mahal will be discoloured and disfigured within 20 to 30 years. Recent theories state that the pollution from the refinery 40 Km. upwind of Agra will be more harmful to the monuments than the pollution from the local sources.

It is a pity that the Export Committee on Mathura Refinery is misleading the Government and the Public on the impact of pollution from the refinery on Taj and its environs. I am sorry to say that the warnings of eminent conservation and environmental specialists on this Committee have been brushed aside by the non-environmental lists on this Committee. I have already warned that beside the short-term high levels of pollutants even non-sulphurous gases like oxides of carbon and nitrogen and aerosols from the refinery and its multiplier effects damage the monuments.

Coming to water pollution problem as the Yamuna river does not have much flow during the non-rainy seasons, it gets seriously polluted even with the industrial and domestic wastes discharged at Delhi and Mathura. Hence, the Yamuna river cannot be expected to receive any extra load of pollution from the Mathura refinery. If the waters of Yamuna are diverted for domestic and industrial uses in its upper reaches in the near future, the situation becomes much worse. Since the waters of Kitham lake which are used for supplementing the low summer flows of Yamuna are going to be diverted for the Refinery, the Agra water supply is bound to be seriously affected, with heavy chlorination, the municipal water supply is bound to become carcinogenic for a million people of Agra. Besides the present generation even future generations will also be affected.

Even at its seventh meeting, this committee did not consider such serious water pollution problems due to the refinery and its multiplier effects. Without waiting for the TECNESCO report and in the absence of the concerned environmental specialists, the Committee gave hasty opinion on 1-5-1976 that there is no need to shift the site for the refinery based on inadequate and unreliable data. While the Petroleum Minister told Rajya Sabha on 25-7-1977 that if the Committee gives an opinion that there will be a threat to monuments, he will get the problem re-examined by the Union Cabinet. But the Committee refused to consider the issue when I raised it on 23-11-77, stating that the issue does not lie within its

purview. Thus there is a lot of confusion about the role of this Committee. It is shocking to find that the Committee did not enclose the notes of warnings about the pollution threat to Taj submitted by eminent experts like Dr. G. Torraca, Dr. B. B. Sundaresan, Mr. R. Sen Gupta and Prof. J. M. Dave (the latter three were members of the Committee) in their report tabled before Parliament on 14-8-1978. Even the reply of TECNECO experts dated 14-11-1977 to the points raised by Dr. G. Torraca was not enclosed.

If we fail to examine the problem in its true perspective to save the monuments, the people and eco-systems of Braj Mandal, posterity will never forgive the present generation and particularly those in power for all these errors of omission and commission. I, therefore, strongly urge the members of Parliament and the Government to act under article 49 of the Constitution to save our innocent people and the priceless cultural heritage which we hold in trust not only for our progeny but for all mankind.

MR. CHAIRMAN: Thank you very much.

(The Committee then adjourned)

RECORD OF EVIDENCE TENDERED BEFORE THE JOINT COMMITTEE ON THE AIR (PREVENTION AND CONTROL OF POLLUTION) BILL, 1978

Friday, the 2nd February, 1979 from 10.45 to 13.00 hours and again from 15.00 to 16.00 hours.

PRESENT

Dr. Karan Singh— *Chairman*

MEMBERS

Lok Sabha

2. Shri Dinesh Joarder
3. Shri B. P. Kadam
4. Shrimati Parvathi Krishnan
5. Shri M. V. Krishnappa
6. Shri Jagdish Prasad Mathur
7. Shri R. K. Mhalgi
8. Shri Govind Ram Miri
9. Shri Nathuni Ram
10. Shri Gananath Pradhan
11. Shri R. N. Rakesh
12. Shri Vasant Sathe
13. Shri Chiman Bhai H. Shukla
14. Shri A. Sunna Sahib

Rajya Sabha

15 Shri A. R. Antulay
16 Prof. Sourendra Bhattacharjee
17 Shri Piare Lall Kureel *urf* Piare Lall Talib
18 Shri Ghayoor Ali Khan
19. Shri Lakshmana Mahapatro
20. Shri Ajit Kumar Sharma
21. Shri Triloki Singh
22. Dr. Rafiq Zakaria.

SECRETARIAT

Shri Y. Sahai—*Chief Legislative Committee Officer.*

LEGISLATIVE COUNSEL

1. Shrimati Rama Devi—*Joint Secretary and Legislative Counsel.*
2. Shri Jagdishwar Narain— *Asstt. Legislative Counsel.*
3. Shri Padi Kani—*Attache.*

REPRESENTATIVES OF THE MINISTRY OF WORKS AND HOUSING

1. Dr. Nilay Chaudhuri, *Chairman, Central Board for Prevention and Control of Water Pollution.*
2. Shri B. V. Rotkar, *Member Secretary, Central Board for Prevention and Control of Water Pollution.*
3. Shri S. T. Khare, *Adviser (PHEE), CPHEEO, Ministry of Works and Housing.*
4. Shri J. N. Kalia, *Under Secretary, Ministry of Works and Housing.*

REPRESENTATIVE OF THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

Shri D. K. Biswas, *Principal Scientific Officer.*

WITNESSES

I. Prof. B. Sundaresan, *Director, National Environmental Engineering Research Institute, Nagpur.*

II. Dr. Nilay Choudhury, *Chairman, Central Board for Prevention and Control of Pollution, New Delhi.*

III. Dr. B. B. Chatterjee, *Professor of Physiological and Industrial Hygiene, Calcutta.*

Prof. B. B. Sundaresan, Director, National Environmental Engineering Research Institutes, Nagpur.

(The witness was called in and he took his seat)

MR. CHAIRMAN: Prof. Sundaresan, before we start the evidence, in accordance with the provisions contained in Direction 58 of the 'Directions by the Speaker', I must make it clear that your evidence will be treated as public and is liable to be published unless, of course, you specifically desire that all or any part of the evidence is to be treated as confidential; even in that event, the Members of Parliament will, abviously, have access to it.

You are the Director of the National Environmental Engineering Research Institute, Nagpur. I must apologize for not having visited it personally although I have come to Nagpur twice.

We have received your memorandum. You have given us an admirably brief and concrete set of suggestions for changes in the Bill. Is there anything that you would like to say, before we start asking specific questions, by way of further elaboration or elucidation of what you have said in your memorandum?

PROF. SUNDARESAN: I have given my points in the statement. If you want, I can elaborate on them.

MR. CHAIRMAN: Your first point is about definition.

PROF. SUNDARESAN: The definition that is given in the Bill does not cover the various aspects.

MR. CHAIRMAN: The definition is very important. This is 2(b). Here you have suggested that the definition of air pollution be modified as:

> "Air pollution means the presence of contaminants in the air in concentrations that prevent the normal dispersive ability of the air and that interfere directly or indirectly with man's health, safety or comfort or with the full use and enjoyment of his property."

What would be the advantage of this expanded definition?

PROF. SUNDARESAN: When we think in terms of the damaging effects of pollution, it has to encompass the entire environment: it has to encompass the health, safety, comfort and full use and enjoyment of his property.

MR. CHAIRMAN: What do you mean by 'enjoyment of the property'?

PROF. SUNDARESAN: Suppose there is an industrial unit located in an area adjoining, maybe, a citrus garden. The release of pollutants, to a large extent, may damage the crops.

So, this is a very specific instance of pollution preventing him from the enjoyment of his proptrty. Similarly, in an urban atmosphere, if an electronic industry is located adjoining an airport, where a lot of noise is made, then it will definitely impair not only the quality of the air but also even the gadgets that are housed which means the proper enjoyment of the property.

SHRI TRILOKI SINGH: Then animals and birds also are affected.

MR. CHAIRMAN: It does exclude birds, it does exclude wild life, it includes only human life.

Perhaps we can put it partly in the enjoyment of the property. I take that point.

Our definition should be such that it is possible that there may be some places where human habitation may be somewhat small, but may be other important aspects are involved. Take the Rajasthan desert. Because people are not there, it does not mean that it can be polluted with immunity, for it also represents a certain habitat. I think that we consider the definition. Your points are well taken but we may have to go beyond that.

While we talk about this, do you have any views whether this work should be entrusted to the Water Pollution Control Board or we should set up an independent Board? If you have any views on that, you may give them. That is a matter to which we are now giving a good deal of attention.

PROF. SUNDARESAN: If you look at the entire spectrum of activities involved in the environment pollution control, we have started late in 1974 with the establishment of the Water Pollution Control Board and during the last 3-4 years both at the Central and at the State level considerable amount of spade work has been done to control environmental pollution with reference to water. Now when we look at the total environment, many times we meet with situations where controlling air pollution will ultimately lead to water pollution. So there will be an interplay and interaction between the control measures taken for preventing air pollution and water pollution. This is a point which should be recognised and to that extent I feel at the present time it is more prudent to have air pollution attached to Water Pollution Control Boards as of now. Maybe because of three reasons: (1) Sufficient spade work has been done by the Water Pollution Control Board in establishing the infra-structure as well as laboratories. (2) The analytical procedures as well as the laboratories that are to be set up are more or less the same and you will find that you will be unnecessarily duplicating the efforts which will cost the exchequer in having two sets of arrangements. Naturally there will be some amount of advantage if we have both of them together. (3) If there are two separate Boards, one for Air and another for Water, we may reach situations later on where from the point of control one of the gadgets or equipments suggested for control of air pollution from an industry may cause water pollution. For instance, take a nitric acid manufacturing plant, where water may be used for scrubbing the oxide of nitrogen and this may come out as water pollution. This type of co-ordination may be missing if again another independent agency is to be established.

MR. CHAIRMAN: This is a very interesting point. What you are saying is that measures to control air pollution may result in an increase in water pollution.

PROF. SUNDARESAN: Yes.

MR. CHAIRMAN: This is a new idea for me. How do you fight air pollution? By diluting it in water and water thereby gets polluted. Can it in fact arise?

PROF. SUNDARESAN: It can arise. Unless at the stage of providing the control system, a comprehensive arrangement or system is thought of both for air and water, particularly in large scale industries this danger is there. It may not be there so much in small scale and cottage industries.

MR. CHAIRMAN: Even if we provide for an independent Board, the laboratory facilities may be common. It may not be necessary to duplicate laboratory facilities. That is not so much the point. But this conflict of interests, as you say, may act occasionally. But the view that has been placed before us is that the Water Pollution Control Boards, functioning as they are under the State Governments and under a different set up and not getting the necessary financial and technical inputs may not be a proper agency for tackling air pollution problems and we would have lost an opportunity to set up a more dynamic new organization. You don't think this is a valid point?

SHRI TRILOKI SINGH: Will it not be possible to have one eminent expert both in air pollution and water pollution as the common Chairman of both the bodies?

PROF. SUNDARESAN: That type of provision is all right. The various programmes that are organized take into consideration not only water pollution but also air pollution. In fact most of the programmes, if you look at the administrator's level or even at the specialist level, does not preclude air pollution as a separate entity, particularly looking at our entire environment *in toto*. Again this approach of air and water pollution being considered separately, to my mind, is conflicting because we are looking at the total environment.

MR. CHAIRMAN: We started off with this idea of Water Pollution and Air Pollution Control Boards. Why cannot we have a joint Environmental Pollution Control Board so that we take the totality? That was a very good concept theoretically, but we run into the following difficulties. Water Pollution Control Board is based under Art. 252 of the Constitution which means the State Governments have to ratify it and they have to pass resolutions whereas this law is now going to be based under Art. 253 which entitles the Government of India to act on its own. There was a fear expressed that if we get involved in this totality we may run into certain constitutional and legal problems which would deadlock the whole exercise. My original thinking was: why can't we replace both these by a single environmental control Board?

PROF. SUNDARESAN: Ultimately that would be the objective but at the present point of time where something has to be done urgently to contain and control the pollution—particularly the seriousness of the situation is such that water pollution has to be attended to immediately. That is being done . . .

MR. CHAIRMAN: Is it being done effectively?

PROF. SUNDARESAN: To a large extent I would say yes, having gone through the various State Boards and being involved in some of their programmes. I would not say it has been 100 per cent successful. What I would concede on this point is that there are areas or there are States which have done a commendable job in containing or at least controlling pollution. For instance, take the State of Kerala where the awareness which was not there before on the part of the industries is very much there now and this is reflected in the number of organizations and industries both of public and private sector approaching not only the Universities but also the research institutions to suggest to them suitable control measures or technology. So when the Boards are insisting on industries to provide control measures, the only alternative for them is to come to

institutions such as ours and the number of inquiries and the volume of work that is involved in our institutions at the present moment is a reflection of the awareness as well as an indication that the Boards are doing a good job, if not an entirely satisfactory job.

MR. CHAIRMAN: So it is your considered opinion that this work should be given to the Water Pollution Boards?

PROF. SUNDARESAN: Yes.

DR. ZAKARIA: I do not think it will be possible for us to have a common Board because the Water Pollution Boards have been formed under the State Acts. All that we can do is that we can say that the Central Government may designate a particular body for the purpose of carrying out the air pollution and entrust that work to the water pollution board but I do not think in this legislation it will be possible for us to in any way amend either the provisions of the State Acts or arm the Water Pollution Boards with greater powers.

MR. CHAIRMAN: We will discuss it separately. The next witness is Chairman of the Water Pollution Board.

AN HON'BLE MEMBER: A fear has been expressed by a witness who has appeared before the Committee earlier that Water Pollution Boards have, by and large, failed to evolve effective methods.

PROF. SUNDARESAN: The weakness does not lie in the formation of the boards. It lies squarely on the set of arrangements in a particular State. But, Sir, when we are thinking of legislation we have to be interested in the total concept. The concept being that even though the constitution of the boards has not delivered the goods in 10 States yet we have to keep in mind that in those 10 States it has achieved the purpose of focussing attention and in 5 States we have made some achievements.

SHRI TRILOKI SINGH: Instead of two boards whether it will be possible to have eight-nine persons who have knowledge both in air and water pollution to implement this Act?

PROF. SUNDARESAN: From the point of view of membership of the board it may not be possible to conceive of all the members to have the expertise but the experts and the professionals who are involved in the area of environmental science will be exposed to all the three areas.

SHRIMATI PARVATHI KRISHNAN: A suggestion has been made before the Committee that there should be a common Board with one Chairman and under him two branches with two executives working under him so that expertise is there and at the same time there is coordination and the number also is limited with the representation of technical expertise and those who would be responsible for the implementation side of it. The implementing authority is not board itself. What is your reaction to this suggestion because it will bring coordination as well as specialisation.

PROF. SUNDARESAN: I agree with this suggestion. In the common board there will have to be experts who are more knowledgeable in the area of air and water.

MR. CHAIRMAN: In addition to giving powers to the existing water control boards one can say that each board will have two sections—air control section and water control section—and thereby you keep the structure of the single board and yet you ensure about air pollution. But the powers of the water pollution control board are limited under that Act and we propose giving more powers for air pollution control to the same board. Will that not result in some confusion unless we specify that each water pollution control board will have a special section dealing with air pollution control.

PROF. SUNDARESAN: Sir, I cannot comment on this as it is more of a legal problem.

SHRIMATI PARVATHI KRISHNAN: When we went on tour we found in one of the States the people who are put in charge were people from CPWD. They are not really experts in this aspect of pollution. Do you think it will be necessary to specify in the Act that the officials who are put there should be those who are technically qualified in the field?

PROF. SUNDARESAN: That is the exact point.

PROF. BHATTACHARJEE: In the matter of water pollution a person with expertise in public health engineering is required whereas in the matter of air pollution a person with qualifications in chemical engineering and physical chemistry is required. How to integrate these two?

PROF. SUNDARESAN: It is correctly pointed out that one of the reasons as to why some of the water pollution control boards are ineffective is that they are not being manned by the proper expertise. Either CPWD or people unconnected with professional expertise manage the boards which has resulted in improper appreciation of the problem itself. Sometimes the Chairman is appointed on part-time basis.

SHRIMATI PARVATHI KRISHNAN: Do you think it should be specified in the Act with regard to the Chairman that he will be full-time and also the people should be qualified.

PROF. SUNDARESAN: Yes.

MR. CHAIRMAN: So my point is if we give it to the existing water pollution control boards and they do not have the expertise then how will we ensure its implementation.

PROF. SUNDARESAN: Even by taking advantage of the existing water pollution control boards constitution the professionals and the technical experts could be appointed as Chairman and Secretary. It can be done even now.

MR. CHAIRMAN: Do we have thirty people in India who are competent to head these bodies?

DR. ZAKARIA: It will be difficult to find thirty people with requisite qualifications. Mr. Khare was the Chief Engineer and Secretary of the Water Pollution Board before joining the Government of India. It is very difficult to get competent and technically qualified people. In Bombay we struggled hard. In regard to air pollution you will face still greater difficulty. We took the personnel from CPWD because nobody was available.

PROF. BHATTACHARJEE: I would like to know from the witness whether the full-time Chairman of the Water Pollution Control Board should be an expert in public health engineering or chemical engineer with expertise in physical chemistry as he has to serve for air pollution control also?

DR. SUNDARESAN: Having been connected with the subject for about 25 years, my experience is that it is the environmental engineer who can do the job. He has to have the necessary background starting from the basic disciplines of civil engineering or chemical engineerings. He has to be sufficiently experienced and trained. Mere chemical engineer will not do the job.

MR. CHAIRMAN: For Chairman of the Board you need somebody of requisite seniority and stature whose word carries weight. To expect that you will get full time Chairman of that seniority as also specialisation is impossible because the specialisation is only five years' old.

Now, what is the position in regard to the laboratories in the Water Pollution Control Boards and what do

you envisage should be done for this Board?

DR. SNDERESAN: At present most of the Water Pollution Control Boards have established their own laboratories or are in that process. Particularly in the context of the air pollution, both collection of samples as well as analysis has to be done in the region. The laboratories at the State level should be sufficiently strong as well as equipped so that they produce the results immediately as well as feed it back immediately for the Board rather than leave this for the Central Board of a Central laboratory. Even for the research institute with headquarters at Nagpur, we have to have nine zonal laboratories in nine different states and even with that we are not completely able to meet the problems as well as feed back to the States.

MR. CHAIRMAN: Are these nine laboratories capable of doing this work with slight additional input?

DR. SUNDERESAN: They can o this job with slight additional input, but there will be conflict of interest in course of time. The designs for pollution control are not readily available and most of the public and private sector undertakings are approaching the Institute for giving them suitable designs for control system. This is what we are doing. If we have to undertake the analytical work for air pollution on behalf of the Board as also be involved in the consultancy services to the public and private sector, there will be conflict of interest.

MR. CHAIRMAN: Are you suggesting that entirely a new set of laboratories will have to be set up for this purpose?

SHRI TRILOKI SINGH: The existing laboratories with the medical colleges can be used for this purpose.

DR. SUNDERESAN: Quite a number of engineering colleges, not the the medical colleges have such laboratories.

MR. CHAIRMAN: Would the laboratories of the regional engineering colleges and the five IITs meet the requirements?

DR. SUNDERESAN: That would at least meet the requirements partly. The Water Pollution Control Board have their own laboratories in most of the States. They can be asked to provide for these facilities also.

MR. CHAIRMAN: The point is whether the laboratories attached to the Water Pollution Control Board IITs and these regional colleges will be able to provide the necessary infrastructure to ensure effective implementation of this Act.

DR. SUNDERESAN: Yes, they can undertake this job effectively.

MR. CHAIRMAN: With regard to the question of sampling, you have said that it is not possible to divide air samples into two parts, which means you should have two samples at the same time, but somebody said that we could bilurcate the sample.

DR. SUNDERESAN: It would impair the quality.

MR. CHAIRMAN: Do you suggest that parallel samples should be taken. Is there a standard procedure laid down for collecting samples and analysis them?

DR. SUNDERESAN: At least we have in our laboratory. The ISI is right now working on this and within a few months they may prescribe a standard procdure for this.

MR. CHAIRMAN: Now, I think water pollution standards are laid down.

DR. SUNDERESAN: Yes, Sir.

MR. CHAIRMAN: But for air pollution, standards were not laid down.

SHRI SUNDERESAN: There are standards laid down in other countries. But in our country there is no standard laid down for this. We need not go in for such a highly sophisticated method of sampling and standardisation which are there in the developed countries. Whatever methods that we are adopting is because we are interested in scientific analysis

and scientific data. So we have standardisation procedure in our own Institute. We being the Members of the I.S.I. are indicating the suitable modifications which the entire country can adopt. Till such time I.S.I. gives the standards for sampling and analysis, we have to take it that we do not have anything laid down for this purpose. On further reference, it has been found that ISI has brought out a few standards for air sampling and analysis.

SHRI TRILOKI SINGH: For the winter season you have different standards.

SHRI SUNDERESAN: The quality of pollusion will vary depending on the seasons.

SHRI TRILOKI SINGH: I am talking of the standards. Will there be difference in standards in different seasons?

SHRI SUNDERESAN: I do not think the pollution standard will vary. But the pollution will vary by seasons. I think you are referring to the interpretation part, particularly when the air pollution is in the atmosphere it will definitely vary depending upon the meteorological position which will change from season to season.

SHRI TRILOKI SINGH: Then there will have to be different standards so far as air pollution is concerned.

SHRI SUNDERESAN: Here I think there are two standards required. One is effluent standard that is being released by the industry into the atmosphere through the slack which has to meet certain requirements. The other is ambient air control standards. That is, up to what level a particular concentration can go. If you talk about sulpher dioxide in a particular environment that will vary from season to season. But for standards we always go in by a figure at the highest point.

MR. CHAIRMAN: Have you seen the report of the NEERI given by an expert doctor?

SHRI SUNDERESAN: It is a pioneer institution of its kind. The point is: is there not any scope for many other such institutions in the country? The nature of problems that are developing the process of environment, particularly industrialisation in our country, is such that one laboratory will not be able to solve the problem of this country. So, even as of now, the headquarters laboratory at Nagpur has to deal with air, water as well as solid waste and when we talk about, here again the question of sewage as well as industrial waste comes in. There are a number of industries that are coming up and the effluent that they release is increasing enormously. It means technologically we find that even in the case of industrial effluences that are being released, we have a solution for a part of industrial effluents that are released. For the remaining part, we do not have a solution. For that, we have to evolve such a technology in our own country. Taking all these things into consideration, it is time that we had additional facilities and additional regional laboratories which would go into this. When it was established in 1959 it was thought that one laboratory was sufficient. Now the problems have mounted to such an extent that one laboratory will not be sufficent to deal with the problem. That is why we are trying to strengthen our 9 zonal laboratories by way of getting financial allocation for this purpose. But ultimately all these laboratories have to emerge into 9 independent institutes.

MR. CHAIRMAN: The question of environmental education is very much in the air. One is the general introduction of education of environmental values into the educational system so that the younger generation can know the problem. Otherwise they will never be able to solve it. The other is the technical education in environmental engineering. Do you think that the facilities at present in our Universities and advanced cen-

tres of learning are adequate and if not what is mechanism whereby its adequacy can be made up?

SHRI SUNDERESAN: I will take up the second question first. We have come up to situations where the various disciplines particularly civil, chemical, mechanical, electrical engineers and engineers who are coming out of the institutions are not fully exposed to the ideas or concept of environment except that after coming out and working in various industries, probably they are exposed. To that extent, we find many persons interested in the design of thermal power stations or persons involved in the design of fertiliser plants were not fully appreciative of the fact that this can do considerable damage to the air or water. So, only now this is emerging to the extent that the introduction of environmental pollution as one of the subjects at the undergraduate level is under consideration. All engineers and professionals who are involved in industrial design as well as process and operation should be exposed to the concept of environment pollution, if not completely, at least the dangers that are involved in pollution. The engineering colleges and universities with proper support from the C.S.I.R. or the University Grants Commission should include this subject in the curriculum. At the school level as well as the younger level this is very clearly emerging that this is to be introduced at the younger generation level. Unless we do that, I think we will be repeating the same mistake for some more generation.

PROF. SOURENDRA BHATTACHARJEE: Of late there was a discussion regarding Higher Secondary curricula where there was a chapter on the subject of pollution and there was a suggestion that it should be dropped because there were strong pleas because this so called bogey of pollution is rather devised to turn the mind of the young students against nature. Ultimately that has been foiled and in the syllabus of the Higher Secondary Class the pollution chapter has been repealed. It seems that there are two basic values. One is about the inculcation of environmental values. That should be there in the general education in primary classes. Of course our old concept says that everything around us is sacred—forests, trees, ocean etc. Sacred, not in any religious sense, but in the sense that they are essential for human existence. Then, as you go a little higher to the under-graduate education, some of the more specific dangers of environmental pollution etc. can be included. Later, the actual specilization can be taken up. But the point should be mentioned, because we should consider making a general recommendation in this regard—not in this Bill.

SHRIMATI PARVATHI KRISHNAN: If that kind of education had been there, the problem of Mathura Refinery would not have been there.

SHRI TRILOKI SINGH: Initially you said that citrus hues had been affected. Have you heard that mango fruit is very much sensitive to this?

PROF. SUNDERESAN: I gave it as an example. In fact, all fruit-bearing trees will be affected, if they are exposed to pollution like sulphur dioxide. They will be retarded in their growth. Any crop, for that matter, will be affected. It has been studied on wheat. On mangoes it has not been done. Environmental engineering, as a profession, has emerged much faster than what we had anticipated.

PROF. SOURENDRA BHATTACHARJEE: May be you undertake consultancy work. Were the results of the investigation conducted by you, published?

PROF SUNDERESAN: Here we go by the guidelines provided by CSIR, particularly when it is on a contractual basis, for undertaking consultancy projects, both for the public sector and private undertakings. These reports are treated as confidential. At the same time, if it is required by

Government, it is given. It is not open to the public.

PROF. SOURENDRA BHATTACHARJEE: If you feel that it is in the wider interests of the public, do you have any authority to make it public? NEERI is a scientific body. I don't think these reports should be kept as classified documents.

PROF. SUNDERESAN: We do publish them in professional journals.

MR. CHAIRMAN: I think we can now call Dr. Nilay Chaudhury; but may I request you to stay on, if you are not very busy? Probably there may be some cross-references needed.

(The Witness then withdrew)

II. Dr. Nilay Chaudhury, Chairman, Central Board for revention and Control of Water Pollution, New Delhi.

(The witness was called in and he took his seat)

MR. CHAIRMAN: Before we proceed I may draw your attention to Direction 58 of the Directions of the Speaker which reads as follows:

"58. Where witnesses appear before a Committee to give evidence, the Chairman shall make it clear to the witnesses that their evidence shall be treated as public and is liable to be published, unless they specifically desire that all or any part of the evidence given by them is to be treated as confidential. It shall however, be explained to the witnesses that even though they might desire their evidence to be treated as confidential such evidence is liable to be made available to the Members of Parliament." Dr. Chaudhury is really a critical witness because he presided over the Board of the previous Act. The fact that he happened to preside over the Board will not in any way prevent him in giving his advice to us as to whether there should be a separate Board. I must say that I am not still clear in my mind whether we have an entirely new set up for air pollution or whether we should give it to the Board. There is also a report by the expert committee of the Government of India which I hope all of you have got. It is a very important report. This expert committee was set up by the Ministry of Works and Housing. Dr. Chaudhury was also a member of that committee. You have not given any separate memorandum. Would you like to give us your general views before we start asking questions?

DR. CHAUDHURY: Parliamentarians do go to different places and see for themselves the problems of pollution and also at least get some acquintance with the functioning of the various Boards. So, I would presume that they have received some amount of first hand information how the Boards are functioning at various levels. I would briefly mention on the structure of it and try to make a comparative evaluation about the functioning of the Board as a result of structural impact.

We have 22 States. Out of 22 States, five are in the northeastern region which are very small sized. Obviously, the problem of pollution in regard to particularly water has not emerged. They are Karnataka, Tripura, Meghalaya, Manipur and Nagaland. If these five States are taken away, we are left with 17 States. Orissa, Tamilnadu have not taken to Central Act. In Orissa, there is an old act which they call River Act. In Maharashtra, which is of course a pioneering State, had already introduced the Water Pollution Control Act much before the Central Act came in. If we take away these three States also, then we are left with 14 States. They have taken to Central Act. There are some States where the Chairman is an administrative person; and then he is helped by the Secretary who is reasonably a senior man; may be a Chief Engineer. For example, in Andhra Pradesh, the Chairman is an administrative person, but the Secretary is always either the Chief Engineer or the next to the

Chief Engineer, that is, Deputy Chief Engineer of the Engineering Department. There is anothr case where the Chairman is an administrative person but followed by a very Junior Executive Engineer or may be the Superintending Engineer. Such cases are in Bihar, UP and Jammu and Kashmir. Then we have the other cases where the Senior Chief Engineer of the State is the Chairman and he is assisted by the Secretary who is also either a Senior Executive Engineer or the Superintending Engineer. Such situations are in Punjab, Gujarat, Rajasthan, Madhya Pradesh, Karnataka, Kerala, Assam and West Bengal. There is another type where the Chief Engineer—may be from the allied section—is the Chairman— may be the Irrigation or the Public Works Department—who is assisted by the Secretary. He is the Senior Executive or may be the Executive Engineer. An example is Haryana and Himachal Pradesh. In short, there are four types of set ups and I would say without any inhibition that the best performances are from those States where the Chairman is also from the Public Works & Engineering Department and is assisted by a Senior either Executive Engineer or the Superintending Engineer.

Now I would like to draw your attention towards the weak States like Bihar, U.P. and J. & K. Here the Chairman could not really attend to the programme of the water pollution control Boards, because of their preoccupation in other places. I would make a little exception of J & K because their problem is not that serious. In regard to many other aspects like industrial pollution and things like that, in the case of Srinagar and J & K cities, because of so much pollution there, may be critical, there is a relevant department like the Public Health and Engineering Department which can look after the matter, if there is no Water Pollution Control Board.

Now we can come to the discussion whether we should have a sort of separate system, a uniform system for this purpose. There is a thinking here whether the two Boards are necessary because one is constituted under the State subject and the other is constituted under the concurrent subject. Now the question comes if you provide with one single board, because here Board means only those 17 members, but the Board is not the administrative instrument of the organisation as each Board will have to have its administrative organisation. That means there would be Technical Section, Scientific Section who will be organising the programme of the Board. If this Board whether it is constituted as Air pollution or water pollution, so long as you keep it as one, its functions will be divided between the Air Wing and the Water Wing. As such technically there should not be any conflict. Now the question comes can it be legally done or not? On this point I cannot say anything because it will have to be seen through.

If we say that the functioning of the control of water and air should be managed by one single organisation and if that is scientifically and technically the best approach, then I think our thinking should be to organise it through one single organisation. I think. Dr. Sunderesan has made one point clear—by controlling it from Air, it may be transferred to water.

I am citing another example. Ammonia or Urea which comes out of the fertilizer plant, urea can be converted into ammonia. You have two techniques. Either you can treat it, keeping it in water and making it free or by stripping it in the air. In any such situation we should try to hit the optimal solution. The industry will try to get the solution which satisfies the planners and at the same time at a minimum cost from his pocket. This kind of optimal solution approach can be given provided the scientific and the engineering organisation work in co-ordination.

Although there are areas where specialisation is necessary, to be a specialist in Air area or to be a specialist in water area, all these people emerge from the same base-scientific discipline or engineering discipline. That means basically they are Chemical Engineers or Civil Engineers. They are oriented either in water or air. This is the way we emerge. If we accept that scientifically and technically it is possible, how to utilise the services of one single board. After all the Board functions. It is a sort of a guide.

MR. CHAIRMAN: You yourself said—all the States have not accepted the Water Pollution Act because it is open to the States to have their own Acts. It means—those States which have not accepted the Act, they will have to come directly under the control of Air Pollution Act. They will have to have a separate Board.

DR. CHAUDHURY: We can persuade the States to accept the Central Act on water pollution.

MR. CHAIRMAN: They will have to accept this because it is being passed in the Concurrent List.

Those States which have not accepted it, there you will have Water Pollution Board.

SHRIMATI PARVATHI KRISHNAN: Why is the delay taking place in Tamil-nadu.

DR. CHAUDHURY: Probably it is not within my competence. Btu since information lies with me I am just bringing to your notice. Tamilnadu had been thinking that they will go in for a comprehensive legislation...

SHRIMATI PARVATHI KRISHNAN: And send the draft to the Central Government also.

DR. CHAUDHURY: That is not known to me.

MR. CHAIRMAN: You feel that by giving this air pollution work to the Water Control Board, the work not suffer.

You yourself said that the Water Pollution Boards fall into several categories. The work is most satisfactory where you have a full time Chairman. We have to provide in this Act that there will be a full time Chairman for the Air Pollution Board.

If you come to the Water Pollution Board or to decide whether to have a full time Chairman, it lies with the State and not with the Centre to decide. Are we not giving them the option?

DR. CHAUDHURY: I am referring to Water Pollution Act 1974 amendment. It did not have the scope for any part time Chairman. In spite of that there was no full time Chairman in some of the States.

The scope of for a part time Chairman was introduced because the small sized States—Tripura, Meghalaya, etc., were finding it really difficult to provide a man because he has either to come from Scientific side or Public Works Department in order to cater their requirements. This part time work was introduced in the amendment of the Water Pollution Act. But the intention is not for big sized States where the problems are sizeable. The intention is to cater to the requirements of the small sized States. We can cite example of J. & K Himachal Pradesh, where the problem is not acute and they can manage with a part time man.

MR. CHAIRMAN: Dr. Zakaria has said that for both Air and Water it is difficult to get persons with the requisite knowledge. Is that an important consideration?

DR. CHAUDHURY: Man has to be equipped with requisite knowledge. For instance you heard yesterday Prof. Dave, Prof. Shivaji Rao. All of us emerge from the Civil Engineering discipline. We are engineers not acquainted with Air pollu-

tion system. With experience we get ourselves equipped with air pollution aspect. I think we will have to train ourselves, to make ourselves available both for Air and Water. But even for that matter the Chairman need not be fully versatile in all subjects of which he has been given the charge.

DR. RAFIQ ZAKARIA: When you said 'nodding acquintance' that itself betrays the fact that the expertise that is expected may not be there. After all, you will be dealing with industrial giants who would come forward with all sorts of explanations saying it is not causing any pollution. So you should have a person who will be able to meet the challenge that will come from the pollutors.

MR. CHAIRMAN: This being a new discipline, a great deal of expertise will have to be developed, but we cannot wait till then.

DR. RAFIQ ZAKARIA: We should have an institute along with it to train people. Those whom we are able to appoint also will have to be reoriented properly into the new techniques. So, when you are putting the qualifications, you will have to be careful.

DR. CHAUDHURY: I think section 11 takes care of that. I can borrow expertise available in the country or even from other countries and agencies like WHO to counter the challenge posed by any giant industry.

SHRI VASANT SATHE: Yesteray we heard Dr. Dave and Dr. Shivaji Rao, both of whom said that air pollution is of a different nature. While water pollution is restricted to the river and river-bed, air pollution travels over a much larger area and cannot be strictly localised. Therefore, it has different technological dimensions and the expertise for containing air pollution would also be of a different kind. Both of them were at pains to tell us that the board for air pollutfon should be separate, with a Chairman and probably Secretary who would have adequate knowledge of this technology ... What is your reaction to this?

DR. CHAUDHURY: I have also in front of me the memorandum given by Prof. Dave. Because this is going to be an official document, I would like to point out that both Prof. Dave and Prof. Shivaji Rao are not doctorate holders. Not that I am trying to malign them, but the fact should be recorded. They are not Ph. Ds.

Of course, the pollutants discharged in the air are carried by the air medium and the pollutants which are discharged in water are carried by water medium. But the nature of dispersion of the pollutants is comparable; only the media are different. There are many basic cools which are very common in the utilisation of the dispersion pattern, whether it is air or water. Prof. Dave tries to say that water pollutant recognises geographical boundary whereas air pollutant does not. I do not think it is correct. Both do not recognise geographical boundary. If it is an intercountry river, it does not recognise geographical boundary. If it is a river confined within the country from its origin to its destination, of course it recognises geographical boundary.

MR. CHAIRMAN: Even then it covers several States.

DR. CHAUDHURY: So, in this respect I cannot differntiate one from the other. Then, the kind of engineering training given today under the name of environmental training does not cover only water pollution control. It also covers air pollution contral. I came across a specialist in air pollution control from the USA the other day. He said, even today in USA they find it difficult to fill up posts for air pollution control because of dearth of manpower. So, we will be facing that kind of difficulty here also.

SHRI VASANT SATHE: Is not air pollution control an independent branch of environmental science?

DR. CHAUDHURY: There will always be specialists in certain areas. A person who has always been working in air pollution control by his constant exposure to that subject will be definitely more specialised than a person who has got a general acquaintance with the subject. In medical practice also, there are ENT and other specialists.

SHRI VASANT SATHE: A heart specialist will not be entrusted with neuro surgery unless he is an expert in that also.

DR. CHAUDHURY: In that matter, there will always be a general parctitioner.

MR. CHAIRMAN: The distinction that Prof. Dave has sought to bring is that there is a certain difference between the two but the fact is that they are both closely related.

SHRI VASANT SATHE:; If they were the same technology, then what was the need of having a separate Act for this?

DR. CHAUDHURY: When we are speaking on the air pollution control Bill, we are providing some enabling provisions and also some operative clauses. Now, when you have given these enabling clauses as well as operative clauses regardless whether it is given to a single agency or two agencies, depending on the strength that you have provided in this particular Bill, the function of air pollution Board will be in that order.

MR. CHAIRMAN: There was another suggestion. Generally it is agreed that there is a possibility of having one Air Pollution Board at the Centre as an independent Board apart from the Water Pollution Board, provided the Central Board gives some of its functions to the State Boards. Now, here is a central board of which you are the Chairman. According to this Act, it will automatically get converted into Water and Air Pollution Board without any influx of expertise or membership. Would you think, as Chairman of the Water Pollution Board, you can handle air pollution without any additional input?

DR. CHAUDHURY: The Board consists of 17 Members whether there is any change or no change. As a matter of fact the Board may be meeting six times in a year or four times in a year. During this once in two months meeting, they will go into various aspects of policy matters and it may last for four or six hours. This is the only counsel we receive from the rest of the Board Members. The major functions are really performed by the Chairman and the Member Secretary of the Board. If it is so desired that some of the Board Members should be so organised that they cater to two disciplines—water interest as well as air interest—these 17 members can always be re-organised. The strength of technical functioning of the organisation is really not lying with the Board; it is lying with the technical wing of the whole organisation.

MR. CHAIRMAN: The expertise at present is of water pollution. If air pollution is added to it, would you be able to strengthen the technical wing?

DR. CHAUDHURY: Most of the Boards have got two wings—scientific wing and technical wing. Both the wings consist of knowledgeable people in air as well as water. That means, people will have to be strengthened in both the wings.

SHRI VASANT SATHE: There is one difficulty which occurs to me Constitutionally, this Act is under Art. 253 and the Water Pollution Act is under 252 whereas the State Boards are under the States' Acts having been

given consent by the President and they exercise certain independent authority under the Constitution. Now, under this Act, whatever decisions are taken by the Air Pollution Authority they will be binding on all States Boards. Whereas the Board is one, it was having different authorities under this. Will it not result in dichotomy in the State Boards themselves exercising one authority under one Act and the same persons having another authority under another Act? So, when you think of an independent Act at the Centre, would it not be advisable to have a comprehensive authority dealing with air pollution at the Centre itself having proper expertise, which would handle the whole job with units in the States? What objection have you to that?

Then you made a remark about Prof. Dave and Prof. Shivaji Rao not being Ph.D. Does that in any way minimise, according to you, their knowledge or expertise in their respective fields?

DR. CHAUDHURY: I have not reflected on the level of knowledge of these persons. I have no desire to do that.

SHRI VASANT SATHE: These two persons are internationally accepted and recognised for their expertise in their branch.

DR. CHAUDHURY: Agreed. But would you not accept that it is without doctorate?

SHRI VASANT SATHE: What has doctorate to do with that?

MR. CHAIRMAN: Regarding the setting up of an entirely new structure under this Act except the point that Dr. Zakaria and others have raised with regard to the unavailability of personnel, which can be met in fact by appointing many of the persons who are on the Water Board as members of this Board, is there any other problem? For example, if you set up an independent board, largely the same people can be appointed part-time. Is there any basic objection to setting up an entirely new set up? Are you afraid that there will be lack of co-ordination or there will not be sufficient expertise? What is the fear?

DR. CHAUDHURY: I was trying to say that if these two components, air and water, are coming under the purview of the same type of body, then why not we try to integrate it rather than separate it? I had no other intention in mentioning it.

SHRI VASANT SATHE: We could later on think of having an environmental wing in the Ministry which will coordinate the working of the various branches on environment. Then coordination could be brought about. But you mentioned the example of medical terminology of neuro-surgery and E&T. Apart from the constitutional difficulty, what is your objection to having a Board with a Chairman who is knowledgeable like you?

MR. CHAIRMAN: Let me give you the example of Air India and Indian Airlines. Now they have integrated and have one Chairman, which is a different matter. But earlier we had a situation where the members of the Board were common but the Chairman was different. When they dealt with the problems of Air India, the concerned Chairman would preside and so also in the case of IAC. Is it not possible to get over the constitutional difficulty and also the difficulty of some States not having accepted the Water Pollution Board yet, and have a mechanism whereby for all practical purposes the same people will be involved?

DR. CHAUDHURY: There are two aspects. One is legal for which I am not competent to say anything, as to how it can be brought about. A reference was made to specialisation in neuro-surgery and heart. But specialisation in air and water pollu-

tion is not that fine, as it is in the case of medicine.

SHRI VASANT SATHE: What is the situation in Scandinavian countries, Germany, England, France or USA? Do they have common Boards?

DR. CHAUDHURY: I will take USA and Japan one a large country and another a tiny one. In the USA they have got one single Environmental Protection Agency at the Central level, having all kinds of disciplines in it. Similarly, in Japan they have an Environmental Agency having all the built in components in it. Both these two organisations are directly responsible to the Ministry. Both countires have federal structures. If we come to UK they have created a river authority, which is in charge of the total water management system, starting from the use and discharge. They have got the alkaline spectrum, which is looking to air pollution from alkaline industry, which is one of the oldest system in that country. Even though that unit is still maintained and there are two parallel organisations running, there is co-ordination done. Here is an example which, of course, we can cite regarding where these two are kept separate.

MR. CHAIRMAN: You are answering an earlier question. Your fear is simply this that there will be overlapping, duplication and lack of coordination. Is this the basic apprehension in setting up an independent body?

DR. NILAY CHAUDHURY: Yes, overlapping and duplication are there definitely. Lack of coordination is also there. Consequently there is unnecessary expenditure also.

MR. CHAIRMAN: But if that duplication and overlapping can be kept to the minimum by adopting some kind of a strategem, say laboratory facilities can be common, technical expertise can be common, is it your feeling that by setting up a separate body, we would be moving away from the integrated environmental approach, which is supposed to be the idea?

DR. NILAY CHAUDHURY: My major fear is there. That means, instead of integration we will have a kind of conflict of specialisation. After all, there will be two Chairmen and so there will be personality clash.

SHRI VASANT SATHE: What conflict do you envisage?

DR. NILAY CHAUDHURY: The major conflict would be that the Chairman from the water pollution side would be keeping his interest to keep his water clean.

MR. CHAIRMAN: An interesting point was made today. He said that many of the air pollution prevention techniques resulted in water pollution because when you scrub the air, for example, you really wash it with water. What you are doing is that you are reducing air pollution but you are increasing water pollution. This is something which had not struck me.

DR. NILAY CHAUDHURY: This pollution, after all is not banished. The only thing is that sometimes we convert that into an innocuous stage.

SHRI VASANT SATHE: As far as the coordination aspect is concerned, if the coordination cell is there in the Ministry where both the Chairmen would be there with the Secretary and with the Minister dealing with this, then why should there be one man? Because, there is this tendency of centralisation also. We have seen the Secretary being also the Director in many fields. This tendency also grows. When we are talking of specialisation and expertise growing coordination apart from the legal aspect—and I am very serious on this legal difficulty because of the two Acts being under two different Articles, scope being different altogether—will create a hell of complica-

tion at State level. But apart from that, if coordination is provided for, then why can't there be coordination between specialists at the ministerial level? And there can be Joint Committee of two Boards where both the Chairmen will meet. For example, as he said, if a particular air pollution technology is going to enhance water pollution, how to minimise that? Both will have to be taken care of. But if there is one man and if his expertise is more on water pollution aspect, human beings being what they are, he may neglect the air pollution aspect to that extent and there will be no answerability to the air pollution aspect and his viewpoint will dominate. As we have seen yesterday, although we are becoming conscious of air pollution only of late, water pollution problem has been there for quite some time. But you have seen the hazards of air pollution. Therefore, a serious note has to be taken of this aspect and a greater awareness has to come in the country. That would be possible only if the specialisation is under a separate Board but with coordination. Otherwise the whole objective of the Act may get defeated.

MR. CHAIRMAN: The fear is that this is the water Pollution Act and we will not be calling it 'the air and water pollution'. All that will happen is that the Water Pollution Board will be given air pollution work. Air pollution work will become the junior partner. So, the fear is that the special emphasis that is required on air pollution may get diluted in the water.

There should be a Ministry for environment or a department of environment. We can have a Department of Environment, like the Ministry of Works, Housing and Environment. This is the recommendation we will make. We have got a Department of Environment in the Government of India headed by a Secretary, who would provide the coordination between the Water Pollution Board, and the Air Pollution Board. Probably we may set up separately a Noise Pollution Board. All these environmental control bodies would be coordinated at the level of the Department of Environment in the Ministry of Works, Housing and Environment. This is something which should be considered.

DR. NILAY CHAUDHURY: Probably as you say, that is the thing to come. In other words, if really we have to integrate the various aspects of environment, in order to give a requisite thought in each area of the environment, we will have to set up a Board or an expert body and there will have to be such an organisation like this.

There is another point. I do not know whether it is relevant here to mention. Clause 18 of this Bill reads as follows:

"In the performance of its functions under this Act—

(a) the Central Board shall be bound by such directions in writing as the Central Government may give it; and

(b) every State Board shall be bound by such directions in writing as the Central Board or the State Government may give it;"

The same thing is in regard to Water. In other words, if there is any conflict as is mentioned here, because these two are constituted under Separate Acts, they may not abide by the instructions or directions given by the Centre to the States. In both cases, the enabling provisions are there.

MR. CHAIRMAN: The Nobel Prize Winner, Dr. George Ball, is lecturing today at 5 P.M. at the India International Centre, and I happen to be presiding over it. He is a great environmentalist, he is very much against nuclear explosions etc. So, I suggest we may conclude our afternoon session by 4.30 to enable Members and senior

officials who wish to attend it to go. We have arranged a bus which will be available at 4.30 p.m. So, we meet at 3.00 and conclude by 4.30.

Tomorrow, we have only one witness in the morning, Dr. Deoras of Bombay, but I have also requested the Secretary of the Petroleum Ministry, Mr. B. G. Vohra, to come at 12 O'clock.

SHRI TRILOKI SINGH: Will it not be good to have a lesser number of people to make the Board more effective and efficient?

DR. CHAUDHURY: I would like to mention that for minor offences if some direct power is given to the Board, it would be helpful.

In regard to the size of the Board, our experience is that it is becomes very difficult to get the quorum sometimes.

MR. CHAIRMAN: Therefore, you think a larger or smaller number is better?

DR. CHAUDHURY: I do not know, I am not clear on it.

MR. CHAIRMAN: It may cut both ways.

(The Committee adjourned at 13.00 hours and reassembled at 15.00 hours.)

III. Dr. B. B. Chatterjee,
Professor of Physiological and Industrial Hygiene
All India Institute of Hygiene and Public Health, Calcutta

(The witness was called in and he took his seat)

MR. CHAIRMAN: Before we proceed, I may draw your attention to Direction 58 of the Directions of the Speaker which reads as follows:

"58. Where witnesses appear before a Committee to give evidence, the Chairman shall make it clear to the witnesses that their evidence shall be treated as public and is liable to be published, unless they specifically desire that all or any part of the evidence given by them is to be treated as confidential. It shall however, be explained to the witnesses that even though they might desire their evidence to be treated as confidential such evidence is liable to be made available to the Members of Parliament."

Mr. Chatterjee, you are associated with an important medical institution where the public health aspects are particularly in prominance. Naturally, our Bill on Air Pollution has got a very direct correlation with health because in the ultimate analysis, air pollution is a grave health hazard. We were therefore rather surprised when we saw the report of the Study Group of our Committee in which you are reported to have expressed the view that in fact there was no necessity for a Bill and that there was no threat to health from air pollution. This is so startling and so much against the whole thrust of our deliberations that the Committee is still in a state of advanced shock and therefore, we thought that we would invite you here to give your oral evidence as to whether you misunderstood or in fact these are your views. If these are your views, we would like them to be elucidated. We do not want to influence your views in any way. Would you like to say anything?

MR. CHATTERJEE: As a matter of fact, I have been discussing this with my students also for some years because I teach atmospheric pollution and I give my candid views to my students. I told the same to the Committee. I learnt from the Members of the Committee who visited the Institute that it is not very well understood by the average public, a lay person. It depends on the dosage particularly when we are dealing

with chemicals. For instance, hydroxide is poisonous, but in medicine we use it in a diluted fashion. Atmospheric pollution is bad. Everybody knows that atmospheric pollution is bad. But the crux of the matter is that it is the dosage of the poisonous things in the air, water or whatever it is that matters. What we have to consider is the dosage of the toxicated elements in the air. So many studies have been made. It first started in 1955—59. NEERI and BARC have been collecting data from various parts of India. These data are being published in the various journals. A consideration of what the WHO and the other people have said—they have said that these are the levels which are harmful—would show that whenever such things are specified, there is always a reservation and a safety factor. In the subject that I profess, occupational health, we tackle a lot of poisonous things at the work place like the carbon monoxide. Upto the level of dosage which would not be harmful, it could be allowed. But beyond that, something should be done to control the carbon monoxide. The lay person can ask why there should be any carbon monoxide at all, but such a thing, unfortunately, is Utopian. It is not possible to arrange zero exposure, neither is it necessary. The body has got sufficient reserves to take care of such things. Some geusstimates have also been made of the tolerable limits. I have given figures for 20 years, from 1955 to 1975, which show that in spite of the increase in population in these 20 years and the coming up of a number of new industries, the level has more or less remained constant. It is not as if you start an industry and immediately pollution springs up. So, my submission is that pollution is not sufficiently high for us to have an all-embracing Bill like this at this moment. It is there in some localised places like the Chembur-Trombay area, but to contain that it is quite sufficient to take some local action. The powers of the local bodies and municipalities can be strengthened.

Let us take the disease that we are trying to prevent. This is nowadays known as chronic non-specific respiratory disease (CNSRD), like chronic bronchitis. This is intimately connected with the levels of atmospheric pollution. This is one of the important diseases in Gt. Britain and some of the other industrialised countries. This is becoming more and more important, but we do not have any data about it in our country.

The other fact is that this particular disease is caused by various other factors also like smoking, socio-economic situation, grim over-crowding etc. So, by controlling atmospheric pollution alone, which is not very much, you cannot get rid of this disease. So, my suggestion is that controlling levels of pollution should not be done in the name of health.

MR. CHAIRMAN: Your contention that pollution does not constitute a health hazard seems to run in the face of all the evidence which has appeared so far in India and abroad. Yesterday somebody said that if the Mathura Refinery comes up, a million people may be poisoned, subject to cancer in one way or another. There are lots of studies all over the world, I had seen some of them when I was Minister of Health, to show without any doubt that there is correlation between the quality of the air and the quality of health. You are right when you say that there are certain levels beyond which there is health hazard, but could it be your contention that altho'gh those levels may not yet have been reached in many parts of India, a farsighted Parliament or Government should not take steps now itself, but wait for those levels to be reached and people to get the disease, because we are now in a critical phase of industrial and economic development and unless we build this anti-pollution technology into our industrial structure

and unless we accept environmental values now as an essential and integral part of our planning, then in 2000 A.D. when your successor says that the danger levels have been reached, we may not be able to reverse the process. I can understand your feeling that the threat is overestimated or exaggerated, but I cannot understand your attitude that we should not have a Bill.

DR. CHATTERJEE: The control proposed is only a patchwork, it is not a radical solution. The radical solution to the atmospheric pollution problem is to try to develop fuels which are non-polluting. In a couple of decades, possibly, sooner or later, the technology would have given us the answer and we would have fuels which would not give rise to pollution like harnessing of the solar energy. I have purposely put it as twenty years because if you wait for two or three decades, people will not be dying and by that time we would have already developed non-polluting fuel. If the Parliament is really keen to do something about atmospheric pollution, it should give more attention for the development of non-polluting fuel.

MR. CHAIRMAN: The two things are not mutually exclusive.

DR. CHATTERJEE: In Brazil, for automobiles, they are compulsorily mixing alcohol with petroleum. This is known as gasoline. As a matter of fact, this is used without much modification of the internal combustion engine. They mix up 30 to 40 per cent of alcohol with petroleum. In addition to the advantage of not polluting the air, that saves petroleum. Now in a country like India which is an agricultural country, alcohol can be very easily made in very large quantities from wastes, cellulose materials. The technology is there. There have been some studies by NEERI as to what is the pollution level in Calcutta and in other places. They have studied that the Chemical engineering and ordinary engineering industries and power houses and so on and so forth have so many tonnes of these and how much is being thrown out per day, per year. They have also estimated the quantity that has been thrown out by domestic burning of the fuels. The exhaust from the industry comes out from the high level, it gets diluted and goes down ultimately. But the low level pollution which affects the people's health largely is that which comes out from domestic burning. This would amount to a sufficient quantity and would lead to a great deal of atmospheric pollution. What can this Act do for supply of what I consider is one of the major pollutants contributing a large amount of pollutants at the lower level which affects the people residing near about.

DR. CHATTERJEE: Your point is that the main pollutant is our fuels. Therefore, such varieties of fuels should be developed which would have less pollution, or no pollution. That is alright. This is a good suggestion. Even then, if we have a Bill, then only the pollution will be monitored at all.

SHRI R. K. MHALGI: I come from the surroundings of Bombay and your experience about Calcutta appears to be different from Bombay. A number of people in Bombay have complained that they are suffering from a particular disease because of this air pollution. Have you at any time studied the surroundings of Bombay?

DR. CHATTERJEE: I did not have much opportunity to study Bombay area. But I was told that there are some pockets where the pollution level is high.

SHRI R. K. MHALGI: You have made a suggestion that something could be locally done. Bombay Municipality is making efforts since the last ten years. But they could not control it.

DR. CHATTERJEE: A survey is being conducted under the aegies of the Bombay Municipality and the KEM Hospital, by my friend Dr. Kamath. It is a long-term study. What the people allege should not be completely ignored. But as people get to know a little about something, they always allege that this thing is causing the disease. The cause and effect relationship is not so very easy to establish. I found some of the members alleging that everybody knows that atmospheric pollution is harmful. It was not known till 1952. As a matter of fact in London it was found that the episode of fog has taken a toll of 40,000 lives and then a study was carried out and the scientists have come out saying that there were some acute and chronic effects. Nobody knew it till 1952. Now that they have come to know about it, they are alleging that everything that is happening is due to air pollution. Here I would like to refer to a small paragraph from an editorial written by Prof. Holland in the journal of International Union Against Tuberculosis—it is from the Journal of September, 1978—he has done a lot of work in atmospheric pollution—of course, it does not support my views—he says:

> "What is not known is the relevant dose of air pollution... As I have said, it is far more difficult to advise the legislators about the maximum levels below we can be sure that no ill-effects will be there..."

There are other facts also like environmental overcrowding.

SHRI SOURENDRA BHATTACHARJEE: Just now, in reply to the other hon. Member, he said that he has not had an opportunity to study the situation in Bombay. The question is whether he availed himself of the opportunities of studying the conditions in Calcutta. The question is whether he undertook some study to indicate the effects of air pollution on the health of the people residing in the industrial areas, slum areas and other congested pockets in Calcutta, which would substantiate the contention of Dr. Chatterjee that the air pollution is not a health problem. His earlier reply was in the negative. He made it absolutely clear that it was not on the basis of any actual study undertaken by him.

MR. CHAIRMAN: Perhaps from published statistics by other people.

SHRI SOURENDRA BHATTACHARJEE: If they had quoted, we could have understood, but it was rather empirical.

He says that firstly it is not a health hazard, and secondly, it is not due to release from industrial units, but rather from domestic fuel at the lower level. That also has not been properly explained.

As far back as 1970 his Institute framed a model Bill which has now come up, but Dr. Chatterjee says that it is not a health hazard. He was asked about the safe level. The scientists there contended that, it was 49 for Calcutta, but he says it is 80 micrograms, but he had no scientific data to support what he said. Even today facts have not been cited. A belief is expressed, but a belief is not a scientific exposition. So, I request him to enumerate his observations and experiments.

DR. CHATTERJEE: As a matter of fact, the Director of the National Institute of Environmental Health, Ahmedabad, wanted to have a survey of atmospheric pollution. I am a Member of the Advisory Committee of that Institute. I persuaded him not to embark on this, because after spending a great deal of money and energy they will not be able to show anything, since there are 10 or 11 factors causing this CNSRD. We must have some 5 lakhs of people under surveillance for studying all these factors and find out the truth statistically. Dr. Kamath has taken up a study. Maybe after five years some result will come out of it,

but if it is honestly screened, the findings will be very meagre.

MR. CHAIRMAN: Is there anyone else in your Institute who subscribes to your views?

DR. CHATTERJEE: Practically nobody.

SHRI M. V. KRISHNAPPA: We visited the Indraprastha Power House the other day. It is supposed to throw out 90 tonnes of ash per day. Now they are developing a device to reduce it to 9 tonnes. What is the harm in asking them to reduce it?

DR. CHATTERJEE: There is no harm.

SHRI M. V. KRISHNAPPA: That may require a law.

DR. CHATTERJEE: That is my question. Does it require an all-embracing law? It is in the public sector. Many of these units in the public sector can be made to reduce the pollution even otherwise. They must also estimate the cost benefit, what it costs to reduce it.

SHRI SOURENDRA BHATTACHARJEE: Wherefrom do you get the idea that this Bill is only to prevent health hazard to human beings?

DR. CHATTERJEE: It is under the Health Ministry.

SHRI SOURENDRA BHATTACHARJEE: No, it is under the Works & Housing Ministry. This Institute did not send any memorandum. His opinion was sought on the entire Bill. Now he says he thought it concerned only health.

MR. CHAIRMAN: Health is an important part of it.

SHRI TRILOKI SINGH: Do not sulphur dioxide particles suspended in the air constitute a health hazard?

DR. CHATTERJEE: If you see the range, it is 330 to 663, but if we take continuous data for 24 hours, it shows that the average comes more near to the minimum.

MR. CHAIRMAN: But the health will be affected by the maximum and not by the minimum. It is like the story of a man who wanted to cross a river. He was told that the average depth is four feet; so he went across but got drowned because it was 20 ft. in between.

Here also, they are affected by the highest level and not by the average.

DR. CHATTERJEE: I teach the subject and it is my view that the levels that are present now are not very high and they are not likely to be high for a couple of decades.

MR. CHAIRMAN: Now, thank you very much, Dr. Chatterjee.

(The witness then withdrew)

MR. CHAIRMAN: Now we had invited the Director of the National Botanical Institute, but he has not come. We have dealt with the Taj and other monuments and we have dealt with human beings. We thought our vegetable life also requires some kind of special protection, but he has not arrived. He has said he was going to be represented by two other people but, unless they are lost in the Botanical Gardens somewhere, they don't seem to have arrived here.

(The Committee then adjourned)

RECORD OF EVIDENCE TENDERED BEFORE THE JOINT COMMITTEE ON THE AIR (PREVENTION AND CONTROL OF POLLUTION) BILL, 1978

Saturday, the 3rd February, 1979 from 10.45 to 13.00 hours.

PRESENT

Dr. Karan Singh— *Chairman*

MEMBERS

Lok Sabha

2. Shri B. P. Kadam
3. Shrimati Parvathi Krishnan
4. Shri M. V. Krishnappa
5. Shri Jagdish Prasad Mathur
6. Shri R. K. Mhalgi
7. Shri Govind Ram Miri
8. Shri Nathuni Ram
9. Shri Gananath Pradhan
10. Shri R. N. Rakesh
11. Shri Chiman Bhai H. Shukla
12. Shri A. Sunna Sahib

Rajya Sabha

13. Prof. Sourendra Bhattacharjee
14. Shri Ghayoor Ali Khan
15. Shri Piare Lal Kureel *urf* Piare Lal Talib
16. Shri Lakshmana Mahapatro
17. Shri Ajit Kumar Sharma
18. Shri Triloki Singh.

SECRETARIAT

Shri Y. Sahai—*Chief Legislative Committee Officer.*

LEGISLATIVE COUNSEL

1. Shrimati Rama Devi—*Joint Secretary and Legislative Counsel.*
2. Shri Jagdishwar Narain—*Asst. Legislative Counsel.*
3. Shri Padi Kani—*Attache.*

REPRESENTATIVES OF THE MINISTRY OF WORKS AND HOUSING

1. Shri Mir Nasrullah, *Joint Secretary, Ministry of Works and Housing.*
2. Dr. Nilay Chaudhuri, *Chairman, Central Board for Prevention and Control of Water Pollution.*

3. Shri B. V. Rotkar, *Member Secretary, Central Board for Prevention and Control of Water Pollution.*

4. Shri S. T. Khare, *Adviser (PHEE), CPHEEO, Ministry of Works and Housing.*

5. Shri J. N. Kalia, *Under Secretary, Ministry of Works and Housing.*

REPRESENTATIVE OF THE DEPARTMENT OF SCIENCE AND TECHNOLOGY

Shri D. K. Biswas, *Principal Scientific Officer.*

WITNESSES

I. Dr. P. J. Deoras, *Medical Biologist, Consultant Post Graduate, Guide Bombay University, Consultant, Bombay*

II. Shri B. B. Vohra, *Secretary, Ministry of Petroleum, & Chemicals and Fertilizers, New Delhi.*

Assisted by:—

(i) Shri T. S. Nayar, *Adviser (Refineries)*

(ii) Shri K. Chandrachoodan, *Director (Refineries).*

Dr. P. J. Deoras, Medical Biologist, consultant Post Graduate Guide Bombay University Consultant Bom bay.

(The witness was called in and he took his seat)

MR. CHAIRMAN: Dr. Deoras, before we start your evidence, I would like to inform you that in accordance with the provisions contained in Rule 58 and the Directions of the Speaker, your evidence will be treated as public and is liable to be published unless, of course, you specifically desire that any part of it be kept confidential. Even in that event, it will be available to Members of Parliament. I just inform you about that.

You have given us a memorandum in which you have made certain concrete suggestions with regard to the Bill and I am very glad that you have given the original as well as the change. I wish more people could do that. Otherwise, you have got to keep consulting all the time what the original is.

There seems to be 2 or 3 main points in your memorandum. Before we ask any question, would you like to present your views before the Committee?

DR. DEORAS: The first and most important point is that you have mentioned in the Preamble that all this started because of the decisions taken at the UN Conference on Human Environment held in Stockholm. The phrase 'human environment' itself is rather ambiguous. There cannot be anything like human environment. It is an environment which is shared by all living things. In that connection I think we have got to go in for a comprehensive Bill on the protection of total environment. We have got a law on water pollution and we are now going to have a law on air pollution. Then there is the sound pollution created by aircraft. There is also pollution by wastes pesticides and in proper conservation. So, in due course we have to go in for a comprehensive Bill. Unless that is done, the problem will not be over. I have mentioned here that this Bill has not specifically mentioned anything about pollution from the aircraft in the sense that it may be spoiling the air, apart from the boom of the sound. It should be a comprehensive Bill taking into account the total environment.

MR. CHAIRMAN: Your point is well taken. I may inform you that, as far as the idea of the comprehensive Bill is concerned, it started off with this objective. But, there were certain problems which followed. Certainly, we may move towards a comprehensive Bill.

Incidentally, this human environment has been taken from the U.N. Conference which was largely accepted all over the world. You are right that it is not only human environment but it includes also natural environment.

DR. DEORAS: I think you have not taken into account the noise caused by aircraft.

MR. CHAIRMAN: We wanted to include the word 'sound' also.

DR. DEORAS: In the case of the definition for air pollution in the present Bill you have put in solid liquid etc. It is all right. One word must also be put in there, namely, 'emission'. Emission may not do any harm to the human beings for one second or so but if the duration is very considerable, then it will be harmful to health. I therefore think that the word 'emission' should also be put in. If you go near the emission and remain there for a major duration, the health might be affected.

MR. CHAIRMAN: Small duration may be a cumulative thing. It may add up to some pollution. Take for instance automobile. A number of automobiles may emit smoke. Even though it may be very small, the cumulative effect is none-theless serious.

DR. DEORAS: The pollution for a few minutes may not affect one's health.

MR. CHAIRMAN: If there are 10,000 automobiles each one emitting smoke, then they may do injury to health.

DR. DEORAS: The word 'concentration' is all right. My next point is that there are a number of appliances that have been mentioned. Take for instance gadgets, equipment which goes in for the induction. In places like Kanpur, Delhi and Agra you find coal being used in chulha or brick kilns. These are not taken into account.

MR. CHAIRMAN: Does it include domestic—cooking coal also?

DR. DEORAS: Naturally.

MR. CHAIRMAN: Is it true that railways, steamships etc. are not covered by the present definition?

LEGISLATIVE COUNSEL: Railways are not covered.

MR. CHAIRMAN: I think railways are also an important source of pollution. You may incorporate the aeroplanes, railways and steam ship under 'vehicle'. Then you go on to say emission by automobiles, internal combustion engines and all such vehicles drive by burning fuel. Even this does not cover the Railways. Why don't you try to cover railways also?

PETROLEUM MINISTRY: We have to use one word 'railways' everywhere.

MR. CHAIRMAN: I think you must clarify this. Maybe, it is a legal matter. The Law Ministry will examine this. They have not been able to incorporate 'noise pollution' in this Bill. We shall put it in our report.

DR. DEORAS: We cannot put it in the Bill.

MR. CHAIRMAN: By the by, Dr. Deoras you are a Memer of the Maharashtra Board for the Water Pollution. May we know how is it functioning there?

DR. DEORAS: I think this is the only Board in India that is functioning pretty well. Others have not started functioning.

MR. CHAIRMAN: Do you think that we can entrust the work of air-pollution to the existing Water Pollu-

tion Boards or should we set up a new parallel organisation for the purpose?

DR. DEORAS: I think it should be incorporated here. With the provisions that are there they are functioning well. There are a number of members nominated from Fisheries, Industries and Agriculture departments on this Board. There are three Legislative Council Members also on this board. To me I think there should be members who know something about Environmental Science.

MR. CHAIRMAN: What do the Council Members know about this?

DR. DEORAS: They are just nominated by Government.

SHRI R. K. MHALGI: Some quota may be there for the Legislators.

MR. CHAIRMAN: Dr. Deoras, the Members will be interested in your viewpoints. Two viewpoints have been put before the Committee—one view point is that they should have a separate organisation for air pollution including some separate State Boards. The other viewpoint is that we should give this work to the State Boards. So, there is a sharp divergence of views on this point. The third is to have a common Chairman.

SHRIMATI PARVATHI KRISHNAN: What is your idea of having a Vice-Chairman?

DR. DEORAS: There should of course be one Vice-Chairman.

The number of non official members should be increased from three to five. We should have a scientific personnel. I do not think that in U.P. Board there are scientist members being put in. I do not know also how it functions in U.P. There should be one composite board.

MR. CHAIRMAN: Do you think that the Vice-Chairman should be a specialist in air pollution?

DR. DEORAS: He should be. In the Environmental Conference our objective was to have a comprehensive Bill. You must put in the words 'sound pollution' in addition to the words 'solid waste and concentrations'.

SHRIMATI PARVATHI KRISHNAN: Mr. Chairman, I want to put a few questions to the witness. Firstly, I want him to tell us whether the Maharashtra Water. Pollution Board is working well and, secondly they have the necessary laboratories for the purpose.

DR. DEORAS: We have a Central Laboratory in Bombay. Besides we have six laboratories in different places. Recently, we have merged these six laboratories with the Health Department because the laboratories in the Health Department are more or less doing the similar kind of work. In fact we are going to augment these laboratories. I do not think that any other State has got as many laboratories as we have. Only last week, we had selected certain personnel. The Board is also getting equipped with staff for the air-pollution. We have purchased some equipment and have got the staff. They have started doing work on air pollution also. Thus our board, though meant for water pollution, has started working on air pollution also.

SHRIMATI PARVATHI KRISHNAN: Do you have difficulty in finding the right personnel for manning them?

DR. DEORAS: Yes. That difficulty is there. Particularly, in Bombay, which is heavily industrialised, competent persons are drawn by the industry.

MR. CHAIRMAN: Dr. Deoras, you said that your Board is working well. Do you think any impact has been made on air pollution levels in Bombay?

DR. DEORAS: We are not dealing with air pollution. Since there is no

law. But along with Municipal Corporation we are dealing with it.

DR. BHATTACHARJEE: Have you got anything to suggest regarding 17 (f). There is no mention of locomotive.

DR. DEORAS: I made mention of locomotive in the very early beginning.

MR. CHAIRMAN: I think if the definition is clarified then that will cover.

DR. DEORAS: Yes.

SHRI TRILOKI SINGH: A suggestion has been made before the Committee that if Mathura Refinery is located near the sea-coast it will avoid both water and air pollution.

DR. DEORAS: Whenever any factory is to be located at a particular place one should see the background level of pollution. In Agra, Kanpur, Bharatpur, etc. you have so many 'chullahs' and brick kilns. Mathura refinery pollution will be in addition to the pollution which is already there from existing sources. Apart from the Mathura Refinery there will be a petro-chemicals complex and it will go in for water pollution. There will be sulphur dioxide. Sulphur dioxide apart from being harmful to human beings and Taj is also harmful for production of wheat and vegetation. There is a lot of land under agricultural in U.P. The total output of sugarcane and other crops will get reduced. All the liquid pollutants will go into Jamuna and from Jamuna it will go into Ganga. Thousands of people come for a dip in these rivers and when they will take a dip there will be tar on their bodies. So, you have to take the total background and the overall picture of damage to environment into account.

SHRI TRILOKI SINGH: Do you think concentration of brick-kilns around urban areas is a source of great pollution?

DR. DEORAS: Yes.

SHRI TRILOKI SINGH: Will it affect agriculture?

DR. DEORAS: Yes. I am told due to pollution one or two types of mangoes are not yielding fruits properly in U.P.

MR. CHAIRMAN: May I come back to the Bill? You have said two things. You said in the Schedule we should add the words 'domestic fire and trash and open fire'. Are they not covered in the present Bill?

DR. DEORAS: I do not think they are covered at present. In 1952 4 to 5 thousands of people died in London on account of smog primarily caused of domestic fire and factory chemical effluents.

MR. CHAIRMAN: Nearly 4,000 people died.

DR. DEORAS: The chemicals settled down, in the fog caused breathing trouble.

MR. CHAIRMAN: Do you think they should be brought within the ambit of this Bills?

DR. DEORAS: Yes.

MR. CHAIRMAN: This is a point which we would consider. Let us go to the next one. What about fines? Are they too small, according to you?

DR. DEORAS: The quantum of fine should be increased.

MR. CHAIRMAN: Sometimes for individuals it may become if—difficult. For industries it may be possible. And when you make some punishment too severe, the judges also tend not to give any punishment at all. We can consider that.

DR. DEORAS: I remember once when President Ford came and visited cleveland certain factories in the area emitting affluents were imposed fine of 15,000 dollars for that day.

SHRIMATI PARVATHI KRISHNAN: What is your experience in Maharashtra?

DR. DEORAS: We have launched prosecution against 35 industries.

SHRIMATI PARVATHI KRISHNAN: Is the action effective?

DR. DEORAS: If we issue notice of prosecution especially for big Industries that itself is a sort of punishment for them. If you say some big factory's name is there in the list, they will rectify the mistake. This sort of deterrent is there. Merely giving their name will set them right.

MR. CHAIRMAN: In respect of some other factories, their names do not count very much!

DR. DEORAS: For them the fine is there.

SHRIMATI PARVATHI KRISHNAN: What is their experience? Have you punished anybody? Why do you say it should be higher punishment?

DR. DEORAS: We have gone for prosecution as I said already.

MR. CHAIRMAN: His general feeling is that it is somewhat less and it should be increased.

MR. CHAIRMAN: How long ago?

DR. DEORAS: From 5 or 6 months of punishment, it takes quite some time to prosecute.

MR. CHAIRMAN: Are you hopeful that you will be able to get them convicted?

DR. DEORAS: Many of them said that they would like to compound the issues after rectification. We have seen that they had completely changed even after a notice. *Danda* should be shown but may not actually be used. This will be a sufficient deterrent.

PROF. SOURENDRA BHATTACHARJEE: You have given some suggestion regarding Water Control Board administering the consent clause. How effective has it been so far?

DR. DEORAS: Consent has been obtained to in respect of about 6,000 industries in Maharashtra.

PROF. SOURENDRA BHATTACHARJEE: You have elaborate machinery?

DR. DEORAS: Members go and see that there is no pollution.

MR. CHAIRMAN: Maharashtra Act is not a Central Act.

DR. DEORAS: That was the first Act in India; then later on the Central Act came in.

PROF. SOURENDRA BHATTACHARJEE: But it has been put to us by somebody that the Water Control Board has not been able to clear even 8 per cent of the consent applications so far.

MR. CHAIRMAN: That might be the national average.

PROF. SOURENDRA BHATTACHARJEE: That is national average.

MR. CHAIRMAN: I want to ask you about one thing—this is regarding environmental education. It is a new science. In 20 years hence this will assume considerable importance. We will need expertise at various levels. Have you looked into the question what is needed in this regard and how can specialisation be possible and how to reorient our educational system to ensure constant output in this field?

DR. DEORAS: Number of initiatives have already been taken. We in Bombay have already taken certain

initiative in the matter. At B.Sc. level, apart from Physics, Chemistry and Mathematics, there is the subject of Environment. From this year we have started training teachers.

MR. CHAIRMAN: Under-graduate B.Sc. course from the first year.

DR. DEORAS: In MSc. there is specialisation.

MR. CHAIRMAN: Certainly this is a hopeful sign.

DR. DEORAS: In Maharashtra we have introduced love of nature. In Germany they have done it in a big way.

MR. CHAIRMAN: You can give us some more information regarding the Maharashtra Education curriculum in this field, how you stress the importance of environmental education and so on. Maharashtra can be taken as a pilot project in this field. Is it optional or compulsory?

DR. DEORAS: It is optional at Under-graduate level. In BSc. you have these subjects; Entomology, Environment, and so on. They are having 4 or 5 other subjects|topics.

MR. CHAIRMAN: That is very good.

PROF. SOURENDRA BHATTACHARJEE: Will the Water Pollution Control Board be competent to deal with air pollution?

MR. CHAIRMAN: He replied in the affirmative.

DR. DEORAS: We can. You will have a large number of civil engineers; you can increase the number of from 3 to 5 non official members. You can have Vice-Chairman; you will have the necessary expertise. This will be useful to look after water and air pollution.

PROF. SOURENDRA BHATTACHARJEE: Integrated approach is better.

DR. DEORAS: There are 4 main governmental bodies in our Board. There are half-a-dozen institutions represented there. There are members of the legislatures, MLAs. MLCs. and so on.

MR. CHAIRMAN: This point was made to us earlier saying that Government particularly nominates legislators on the Board and that there should be more of technical people there.

DR. DEORAS: I think this is a very good suggestion because three months back in one of the Board meeting we had mentioned that pollution could be stopped by taking several measures. But some members and nominated M.L.As said that we should not do that in that way. There was a pressure from the M.L.As and therefore we could not do anything in this regard. Now, these pressure have gone and if we thus reduce the pressure, the Board will function in a normal way.

PROF. SOURENDRA BHATTACHARJEE: On page 2 of your Memorandum you have put an emphasis on technical personnel being included in the Board. Now, I want to know whether persons working in big industries should be included.

DR. DEORAS: No, you cannot exclude them permanently. You can give representation to some specific group of industries. There should be some invitees.

MR. CHAIRMAN: After all the proper implementation of this Act will require the cooperation of industries and if the approach is that the industry should be totally excluded then it might be better from the technical point of view but you would not be able to carry the industry because many of them are public sector industries, not only private industry.

DR. DEORAS: We have got a provision that they can be invitees and in

the earlier Board meetings there were a large number of invitees to our meetings.

MR. CHAIRMAN: So, the Board can be compact and there should be an opportunity for hearing the representatives from the industries. So that provision is there.

DR. DEORAS: Yes, Sir.

MR. CHAIRMAN: Let us say that there is a provision for hearing them. Let us say there is a textile industry and you suddenly say that in Ahmedabad you want a certain measure to be introduced. Is there any provision by which an industry can appear before the Board?

DR. DEORAS: I think there is a provision. Invitees are there, they are invited to the meeting.

PROF. SOURENDRA BHATTACHARJEE: Now, under Section 11 a committee may be formed.

DR. DEORAS: I think there is a provision for invitees, who may not be members of the board.

MR. CHAIRMAN: There are two different matters. One is permanent representation from the industry on the Board. Certainly that can be done. You have 15 or 10 members on the Board and you can have one or two persons representing the industry on the Board permanently. The second point is that no particular guideline is laid down for industry. Surely there must be some opportunity given to them because it is not only a question of industry wanting to pollute the atmosphere. For example in Ahmedabad the industries are there for the last 150 years or so. Tomorrow if you turn round and tell them that they must get import licences for machinery, you will not be solving the problem by that way. There must be some forum where this can be discussed and afterwards we may say all right we would give you three years and within three years you have got to shift over to this type of technology."

MR. CHAIRMAN: On page 11 it is stated that "the State Board shall after giving the person to whom consent has been granted or is presumed to have been granted an opportunity of being heard, vary all or any of such conditions and thereupon such person shall be bound to comply with the conditions as so varied". We must do it in such a manner that the Bill also becomes operative and there is no use of laying down standards by a Committee of experts.

DR. DEORAS: The problem will not be solved if the industries do not keep their factories in order. 80 per cent of them are not maintaining their factories in a proper manner. I will give you an example. A gas company in Bombay was requested to expand its Retorts from horizontal to vertical. We have been requesting them for the last 10 years, but nothing has been done so far, even though this will reduce air pollution.

MR. CHAIRMAN: Maintenance is a national weakness. If you go and see the tourists bungalows, you will find the toilets are filthy and the carpets are dirty. You know we are unable to maintain them properly. So the concept of proper maintenance is still foreign to our national conscience.

SHRIMATI PARVATHI KRISHNAN: It is a question of maintenance that is involved and it is not a question of fresh investment for modernising the building. For failure to proper maintenance, there should be stringent penalty.

MR. CHAIRMAN: You have made a very good point. Of course there is a wear and tear and natural deterioration in any equipment but the maintenance aspect must also be stressed.

DR. DEORAS: Various industries involve so many departments proper

maintenance. Unfortunately, I do not know whether there is even proper coordination within them. We had a very sad experience in our State when two departments started expanding without any proper coordination in even Government departments. Government spent six lakhs to have a national park at "Totladoh" at a distance of sixty miles from Nagpur and it was also tourist attraction. Suddenly, the PWD put a dam on the river and cut one third of the entire forest, the whole thing lost its charm.

MR. CHAIRMAN: The Taj can bring in hundreds of crores of rupees worth foreign exchange. It can pay for Mathura refinery in five years, I am sure. Tourism is solid cash. I have been incharge of the Tourism Ministry for six years and I knew that tourism has a tremendous income potential, but the pollution has caused much havoc.

Anything else? Do you want a full time person to be Vice-Chairman of the Board?

DR. DEORAS: It would be desirable. Many a time, one of the Secretaries of the Department is appointed as Chairman and hardly has any time. One of them Chairman or the Vice-Chairman, should be full time job.

MR. CHAIRMAN: Anything else?

DR. DEORAS: The location of heavy industries in various places should be done on a rational basis, for example you should have an industry based on agriculture in an agricultural belt. It would not be correct to put up a refinery or a heavy steel industry in an area which is agricultural.

MR. CHAIRMAN: This is a very sensitive matter. There is a National Committee on environmental Planning and Coordination. This has got to be built into the Planning Commission that that becomes a filter. Any major project which comes to the Planning Commission should go through the filter of such a body in the Planning Commission so that at the earliest stage some suggestions are made otherwise it becomes a political issue later on and the whole Government somtimes collapses on issues like establishment of a steel plant or some other industry. We must prevent this and this can be done if we have such a built-in mechanism.

Now, originally it was provided that the sample could be divided into two parts, but yesterday one witness said that this was not a practical proposition because the act of dividing it into two parts would tamper with the quality and, therefore, he suggested that we should provide for two parallel samples to be taken rather than divide one into two.

DR. DEORAS: It is a good suggestion. I agree.

MR. CHAIRMAN: And then the manufacture of anti-pollution instrumentation can itself be a major industry. Somebody will have to produce thousands of these instruments. The helmet industry has developed like anything as wearing these crash helmets was made compulsory.

DR. DEORAS: Much of the pollutants, if utilised properly, will also give money. Sulphur dioxide, for example can be used for killing rates, if it could be liquified. D.D.T. was a product developed from the solid wastes thrown by a dye stuff Industry in Basle.

MR. CHAIRMAN: Have you done some work on snakes?

DR. DEORAS: I have been working for the last 20 years on snakes and their venoms for therapeutical purposes, and for anti-vein. I am aware of the Whitaker Farm at Madras. We have a snake farm, at Haffkine Institute established in 1950. But snakes in captivity do not breed.

MR. CHAIRMAN: I believe that in the Madras farm, they do breed

DR. DEORAS: In one generation they may breed. Snakes require some molluscegs and other feed in younger stages. They are not available in the farm. Our snake farm in Bombay is at the Haffkine Institute. You can breed snakes, and put them in Nature. We have provided for this in a Scheme. The Tourist Department of Maharashtra is thinking in terms of having a snake exhibition near the film city.

MR. CHAIRMAN: Thank you very much, Dr. Deoras. Your evidence has been valuable. The next witness will be Mr. Vohra, Secretary, Ministry of Petroleum.

(The witness then withdrew)

Shri B. B. Vohra, Secretary, Ministry of Petroleum, Chemicals and Fertilizers, Government of India, New Delhi.

Assisted by:

(i) Shri T. S. Nayar Adviser (Refineries)

(ii) Shri K. Chandrachoodan Director (Refineries).

(The Witness were called in and they took their seats).

MR. CHAIRMAN: Before we proceed, I may draw your attention to Direction 58 of the Directions of the Speaker which reads as follows:

"58. Where witnesses appear before a Committee to give evidence, the Chairman shall make it clear to the witnesses that their evidence shall be treated as public and is liable to be published unless they specifically desire that all or any part of the evidence given by them is to be treated as confidential. It shall however, be explained to the witnesses that even though they might desire their evidence to be treated as confidential such evidence is liable to be made available to the Members of Parliament."

Shri Vohra, the Committee is grateful to you for coming over here at a short notice to appear before us. As you know, we are dealing with air Pollution Bill and a number of important matters have come before us. But one of the most important things is, shall we say, that the matter has become symbolic of the entire environmental movement not only in India but abroad also. I had been associated, as you know, for many years with environment programme. A great deal of concern is being expressed in India and abroad with regard to the location of the Mathura Refinery. We are aware that a good deal of money has been spent in Mathura and certain commitments have been made. But none-the-less two or three things are weighing very heavily on our mind. The first is the Taj which is the single most famous monument in the world. I cannot think of any other monument of the same importance.

Experts have appeared before us including Shri Shivaji Rao Shri Dave. They have said that the present locaton is highly unsatisfactory. One of the witnesses went to the extent of saying that this is the worst possible site because all the affluence will go into Jamuna and thereby poison the drinking water. It has been suggested to us that a comparatively minor shift of the site—even forty to fifty miles of the present site-will be better. Some people have suggested Etawah—south east of the Taj They say shifting of the site even at this stage greatly minimise the pollutant effect of the refinery. A point has also been made that the existing structures in Mathura, although there will be certain amount of loss, may be used if the factory is not too far, for storage, marketing, residential complex. This point of view has been stressed. The Manager of the Mathura Refinery—Shri Nayak—put up a very dignified and effective case, but I think I am reflecting the views of the the Members of this Committee when I say that the pollution threat to the

Taj may or may not be as much because there are a lot of imponderables, but the possibilty of grave pollution threat to the Taj from the Mathura Refinery is certainly a very real one and even if the situation is not as bad as some of the experts feel even there as a measure of abundant caution there is a view growing in this Committee that the site would not be desirable.

I realise, having been in Government for ten years, when the foundation stone was laid, I am not trying to dissociate myself personally, I am aware of the dfficulties I am also aware of the fact that if the Committee like ours would make a major recommendation, it would give the necessary moral support, shall we say, to the Government to take a decision on this matter.

We thought that this matter is so important that we should hear directly from the administrative head. The Minister we can meet informally later. The Minister himself is reported to have made a Statement that the Taj will not be allowed to be polluted. He said this on the floor of the House and also in the various meetings.

Would you like to say something about this and then the Members could ask further questions.

SHRI VOHRA: At the outset may I suggest—after you have heard me and my colleagues, the Committee may also like to hear the Members of the Expert Committee, particularly its Chairman—Shri Verdharajan because this is one of those cases where the experts do not quite agree with each other. We have been guided by expert opinion in a matter like this. In fact our records show that before the location of the refinery was finalised in 1973, the matter was referred to the National Committee on Environment, (Planning and Coordination). They cleared this site after considerng various environmental factors involved.

You are aware that two factors are —liquid effluents and pollution from the gases. As far as liquid effluents are concerned there is no difference of opinion that this can be handled quite easily. We have water treatment methods. They are being employed. In fact of another refinery at Koyali near Baroda, the waste water is now being used for irrigaton. The quality of the water can be monitored and we have also taken abundant precaution that the treatment is upto the standards expected. In fact our Minister has even gone beyond that—he has directed that we may create a small artificial lake before we let out the water in Jamuna and in this lake we should breed fish.

MR. CHAIRMAN: That is for the Mathura Refinery.

SHRI VOHRA: The health of the fish can show whether there is anything obnoxious.

As far as gaseous effluents are concerned, we have gone very largely by the findings of the Expert Committee that for all practical purposes there is no reason to fear that there will be any damage done. In fact one of the spin offs from this entire exercise has been this—that the observations made by the Committee or order to be made by the Committee in connection with its own work show that the present level of pollution by SO2 in Agra is quite high. According to them the annual average pollution at present before the refinery has been able to go on operation is of the level of 15 to 20 microgram per cubic metre of Sulphur—Dioxide in area around the Taj and their computation, as you will rightly observe has been based on various mathematical approaches. There will not be any appreciable addition to this position by the refinery—may be one to two microgram per cubic meter taken as a whole. The expert committee therefore recommended a number of measures which would improve the situation by reducing the pollution from sources other than the re-

finery. If we are able to take those steps, that in itself will be a great service to this historic monument. They have identified sources of such pollution like foundries within the city of Agra itself, smoke coming out of coal-powered locos in the shunting yards, power houses, etc., in addition to countless domestic stoves burning soft coke. So, the problem has to be viewed as a whole. If we accept the committee's finding that the addition to the pollution will be of the order of 7 to 10 per cent of the existing level of pollution, the thing falls into another kind of perspective altogether. I have not met those experts, but from what I read in the newspapers, certain experts are rightly concerned about it, but I think they have overdrawn the picture, saying that Yamuna waters will be poisoned, people will die, etc., just creating a scare without any reason to do so. The committee has also recommended what measures should be taken to improve the pollution situation not only the existing pollution but as far as the refinery is concerned, they have recommended that we should cut down pollution to the maximum extent by using low sulphur fuel oil and by not using coal in the power houses although it is a cheaper fuel. Treatment of the gases has also been recommended. They have also recommended that a constant watch should be kept on the situation. In view of the totality of the recommendations, it is very difficult to conclude that Taj will be endangered by this new refinery. The distance is 42 KM. The level of pollution in certain other towns of the world where there are historic buildings is unbelievably high. In London city it is 250, in Milan 600 and in Toronto 170.

MR. CHAIRMAN: But they are taking measures now to decrease the pollution. London has become distinctly cleaner over the last 20 years. In Thames which was a dead river, fish are coming alive again. So far as Agra is concerned, I agree there are other sources of pollution but we are introducing a new element in a very sensitive area. If the thing had been there originally it would be a different point, but the objection is, you are *de novo* introducing something. Why do it even if there is the slightest fear that it may have an adverse effect? Taj is made of whit-marble which is peculiarly susceptible to sulphur dioxide. Yesterday the Director-General of the Archaeological Survey of India told us that it would be bad from the archaeological point of view also. You rightly said that expert would not agree, but if the pessimistic experts turn out to be right, we have a very heavy debt of guilt to the future generations. This refinery is a permanent thing which will go on for 150 or 200 years. We may be able to do something about the existing levels of pollution but should we bring in a new source of pollution when an alternative site could cut down the danger by 90 to 95 per cent? This is the figure given to us. We are not experts. Apart from the cost factor, what would be the major objection of the Ministry if the Government of India could be persuaded to take a fresh look at this and look for an alternative site? Is it the time lead with regard to production of petroleum products? What exactly is the objection apart from cost?

SHRI VOHRA: When you ask what objections Government would have to the shifting of the site, no serious thought has been given to this because we are still of the view that it is not such a serious threat as is being made out. I shall give my personal views. These are not the views of my ministry. Apart from the question of having cost involved, there is the question of delay in the construction of refinery on which our plans are built and on which crude from other countries is tied. If we delay the refinery by another four years, whether we will get the petroleum products that is another problem. Finally, technologically, there

seems to be no reason why we should not be able to control the pollution. If the political will is not there, to control even the existing levels of pollution in itself is going to be a difficult job. Supposing, even Mathura refinery was not there, then also we have to do something. All our efforts to the UP Government to close down the power houses there, failed. So, it is not so easy a matter to be tackled. Even if it is taken that the refinery is not being built there, even then Taj would not be safe.

Coming to this particular threat which, according to the findings of the Expert Committee to which Archeological Department is also a party,....

MR. CHAIRMAN: Experts are changing their views. Some remarks were made about this Expert Committee but that is a different matter.

PROF. SOURENDRA BHATTACHARJEE: What he has said is that even the existing level of pollution needs to be tackled very effectively and that if the political will is there, that in itself is not an easy task. Then how does he feel justified in doubling the amount of pollution by having this refinery there?

SHRI VOHRA: This will add upto 10 per cent.

MR. CHAIRMAN: The General Manager of Mathura Refinery stated that it would be 63. According to you, the existing level has to be tackled and that tackling is not being done. If this thing comes up, what is the ground of optimism that it can be tackled? Your own argument seems to be that the refinery should not come up there.

SHRI VOHRA: The damage to the Taj from the refinery will not take place overnight. It will take some time to have its effect felt on it. The way the science is advancing, it will not be beyond our capacity to scrub the gases which escape from the stacks. Certain work is already going on elsewhere in the world. I would not rule out the possibility of technological breakthrough on this point.

The other thing I would mention is that there is a possibility of giving a transparent coat to the Taj as a protective polish.

MR. CHAIRMAN: There are two question involved. One is the question of cost. And the other question is that of timelag of four years if the refinery is shifted from that place. Is there any refinery capacity elsewhere in India coming up which could deal with that gap? We were told the pipeline is not yet complete. It has rather just started. If this is put off for four years, do you envisage any major set back to the availability situation in India? We were told by Prof. Shivaji Rao that if a sum of Rs. 20 or 25 crores extra is spent on the Mathura refinery, this pollution could be reduced by 90 per cent. Can you throw some light on these two points?

SHRI VOHRA: The effects of building the refinery at any other place would be very serious. I would request Mr. Nayar to throw some more light on that. But as far as the second point is concerned. I do not know which kind of amendment Prof. Shivaji Rao had in mind.

MR. CHAIRMAN: It is some existing technology.

SHRI NAYAR: Regarding desulphudization of gases, there are two known cases existing at present. One is a commercial unit operating in Japan. This has been commissioned about 4½ year back in Japan is one of the refineries. The second is a French process developed by their Institute of Petroleum. They have some commercial plant working in Europe. Since the matter is important to us, we had a contact with them and I had an opportunity to see the com-

mercial plant in Japan during one of my visits there. I happened to be there and I remember this unit. I requested them to show me this unit. I saw the unit when it was three years old. It was in a knocked down condition at that time. At the end of three years, the licensees were not in a position to say what is the next step, because it was a failure. They could not run this unit at a time for more than 45 days to period of 80 days continuously. So, if you go in for a technology of that type, theoretically it is a successful technology, but it is not proved. This was the position in January 1977. Afterwards, to our knowledge, they have not progressed further.

Regarding the second process. I had a discussion two months back also when their chief of technology was in India. I asked them for the progress of the unit. We will be burning furnace oil in the Mathura refinery, which contains less than 1.0 per cent sulphur; this process will not work for emission from furnace oil containing less than 2.5 per cent because the sulphur di-oxide content in the off gases is so small that it cannot pick up that low concentration.

MR. CHAIRMAN: In other words, what you are saying is that even with an additional expenditure of Rs. 25 crores, there is no assurance that it would make any substantial impact.

SHRI NAYAR: At the moment it is so. But, as the Secretary mentioned, all are working hard on it, because it is a problem all over the world.

MR. CHAIRMAN: I would read one paragraph:

> "If it is not possible to shift the refinery itself, at least the most polluting units could be shifted to Etawah....the effluents should not be discharged in the Jamuna but must be conveyed through a pipeline and discharged into the river at a suitable place downstream to protect the drinking water supply."

Perhaps, after the project started, you have not considered seriously this aspect.

SHRI VOHRA: Particularly in view of the report of the expert committee.

MR. CHAIRMAN: But, after all, experts in this field are not very many. But air pollution is a developing area and a lot of new data is flowing into the computer as it were. If it can be proved that there is at least a fair chance that the expert commitee may have under-estimated the pollution threat, and if there is in fact a likelihood of serious pollution threat, then the problem of shifting and the time lead are the things that are bothering me. Because, after all, you cannot quantify the Taj: you cannot price it. If after 50 years or 100 years, when everybody sitting round the table are dead and gone, if Taj starts collapsing then we cannot do anything about it at that stage. So, the time lead business is the only matter that is worrying me. It may be possible to think of some alternative methodology, either by importing finished products to make up the gap, or increasing the refinery capacity; what would be your advice? We will give a report in three or four months. Do you think that we should talk to the Minister, or the Prime Minister, or do something about it? After all, this is going to be a national problem. If we have to think of an alternative site, why lose another six months? And by the the time the Parliament also debates it, more time will be lost and the cost will also go up.

PROF. SOURENDRA BHATTACHARJEE: Then what is the record so far as adhering to the time schedule is concerned in the case of re-

fineries? When it has to be completed in two years, it generally takes four to five years. So, this would not really be a big time lag.

MR. CHAIRMAN: It seems to me that the stakes are so high that even at the risk of some infructuous expenditure and time lag, may be the Government will have to reconsider it, because it is going to be a big issue. I think there is no time to be lost on the part of the Government. Government have spent public money, not private money. We are not doing this in any way to embarrass the Government. Luckily for them, they can always say that it was the previous Government which did it. So, the political disadvantage will come only to our shoulders. We have to look at it from the point of view of our children and grandchildren who are going to live in India in the 21st century. No one will argue that the putting up of a refinery will in any way improve the environment. It is such an intangible thing that it becomes really very difficult for anybody to take the responsibility and express an opinion either way. This is the broad thinking of the Committee so far. I want to keep you informed so that you can inform your Minister, because we are not simply talking of the technicalities. If the Minister wants to meet us, we would be very happy to meet him. Ultimately, the decision has to be taken at the political level, and not at the administrative level.

SHRI VOHRA: The first question which was asked was about the effect of the set back or delay in having an alternative site. The money spent on this project, including the equipments, comes to Rs. 140 crores.

MR. CHAIRMAN: But that includes equipment, which can be utilized in the alternative site also.

SHRI VOHRA: The second question was about the cost which the country has to bear. The amount of crude which will be processed by this refinery is about 6 million tonnes a year. The differential between the cost of imported crude and the cost of the product here is about 70 dollars a tonne. Computed at the level of 5.4 million tonnes a year, it works out in terms of crores of rupees about Rs. 300 crores a year, which means at the present day prices in four years it will come to about Rs. 1,200 crores. But whether we will be able to get these products from any other source is a very big question now.

MR. CHAIRMAN: Is there not any expansion of refinery facilities in Bombay or anywhere else? Is any other refinery being built anywhere in India?

SHRI VOHRA: No. This is the only refinery and whatever small expansion projects we have, that is taken care of in our computations of our expanded demand for projects. So this lag which will be created by the delay in the setting up of new refineries wherever it is, cannot be taken up by any of the existing refineries. In fact, only yesterday we had a meeting with the Planning Commission to discuss what further additions to refinery capacity need be.

MR. CHAIRMAN: Because the existing refineries could perhaps expand quicker?

SHRI VOHRA: We can expand. We have taken all that into consideration. We are going to allow those expansions to take place in order to cope up with the additional demand. And in addition to all that, we are thinking of new grass-root refineries which should be taken up within a year from now. That means, if it is taken up in 1980, it should start production in 1984.

MR. CHAIRMAN: Where would that be?

SHRI VOHRA: The location of that will be considered by an expert committee on the basis of demand and supply projections.

MR. CHAIRMAN: Is this going to be a new expert Committee?

SHRI VOHRA: This is not going to be an expert committee on pollution.

MR. CHAIRMAN: Environment values are involved in that.

SHRI VOHRA: We will involve, of course, the Department of Science and Technology fully with regard to the location of that new one. It means, purely in money terms it is going to be a heavy charge plus this unknown factor of whether we are able to get these products from anywhere else at all. We are today importing some products from Russia. We find it difficult even to get 2 lakh tonnes extra. It is a very difficult problem. Apart from this, you have very rightly said that taking a long historical view 50 years from now, whenever a decision is taken on this complicated matter, I think either way there will have to be some act of faith. But if we stick to this location, it is almost near certainty that it is not beyond the possibilities of science. If we can land a man on the moon and bring him back, I think we have not explored all the possibilities so far of saving the Taj not only from the refineries, but even from the existing pollution. As a layman I am almost sure that if we concentrate on this, if we seek the latest opinion from whatever sources it may be available and if we commission somebody to carry out research, if necessary,—a lot of research is taking place in countries which are highly polluted like Japan and America where the degree of consciousness is much higher.—I am sure that some technological solution is bound to be found for this problem. It is not as if it will be beyond the scope of science. We do some kind of spraying on our cars. We have our cars painted and we use vax and all that. On this point of pollution, as you observe, consciousness has come only during the last 10 years. In fact in the 1972 Stockholm Conference there has been concentrated attention paid to these problems. Otherwise nobody botnered about them. Even in Delhi, I would very much like to ask the Archaeological Department whether they have paid any attention at all to the damage that is going to take place to monuments like Red Fort or the Juma Masjid or the Humayun Tomb. Is anybody worried about Taj actually or is it like a catch word "Save the Taj"? I am talking of the Department of Archaeology which should be concerned about it.

MR. CHAIRMAN: The Department of Archaeology has been rather slow on this. We pointed it out yesterday. The Archaeological Department should really be the department to raise this hue and cry. Even to be fair to the GSI, the degeneration and deterioration of marble and stone we were aware of. But this problem of air pollution etc. is very new. Even in the West the chemical pollution by these gases, as you say, has been there for the last 10 years and so it is new. All the more it becomes incumbent upon us to take the longer view. The Refinery has not yet been commissioned. Now the knowledge is beginning to come in. Now we are caught in this excruciating double mind. If we do not take the cognizance of the knowledge, we are going to be condemned before the bar of public opinion.

SHRI VOHRA: It is the same thing with the Taj itself. It is not a question of money. You cannot build Taj again. Even if you have the money, you cannot get the products. It is at the moment planned to go into operation in the second half of 1980.

MR. CHAIRMAN: Within a year and a half?

SHRI VOHRA: Yes.

SHRI SOURENDRA BHATTACHARJEE: For how long the gap has been existing?

SHRI VOHRA: When you say Rs. 300 crores in absolute terms, this

factor has to be taken into account—the existing gap. We import products to the extent of about 401 million tonnes these days. But with the operation of this Refinery this has to come down.

MR. CHAIRMAN: And you must have worked out consumption patterns over a certain period?

SHRI T. S. NAYAR: We have about 27.5 million tonnes capacity refineries as existing today. That is the normal capacity. But we can achieve about 26 million tonnes only. The realistic capacity which we get in a twelve month period is about 26 million tonnes. With the addition of 6 millions at Mathura, one million at Bongaigaon and the expansion of Koyali we expect it to be 36 million by 1980-81.

Only this year we did not have a big gap between demand and refining capacity as such, but Burmah-Shell and Caltex and ESSO refineries are 23 years old. The refineries built in 1962 are also getting old, and we are not getting more than 10 to 11 months operation in any year. Therefore, we imported 4 million tonnes last year, and this year it is going to be really alarming. We are short of refining capacity from 1978-79 and we thought that with the commissioning of the Mathura rafinery we would have a little cushion in 1980-81, but with the present growth rate, there will be no cushion from now onwards, and we are going to live with a deficit in all the years to come unless we put up 6 million refining capacity every alternate year.

SHRI VOHRA: The expert body which I mentioned is going into the question where it is to be located.

MR. CHAIRMAN: Perhaps the same expert body could go into the question of the Mathura refinery also. An integrated approach to the problem would evidently be of advantage. The time lag would conceivably be reduced if some advantage could be taken of the existing structures in Mathura and only the more polluting elements are shifted.

SHRI VOHRA: The point really will be whether we completely rule it out, because the stakes are so high either way. It will be a very difficult decision for anybody to take. This will be comparatively easy, but the question is whether we will be able to contain the pollution created by Agra.

MR. CHAIRMAN: Even if Mathura was not there, that would be one of the major recommendations of our Committee. With the already existing heavy pollution in Agra, this addition would be the last straw. Had there been no pollution in Agra, this might be an acceptable level, but this will be the blowing pollutants 40 k.m. according to the direction of the wind.

SHRI VOHRA: Apart from Dr. Varadarajan, you might like to discuss it with the Minister and perhaps on a crash basis we can ask the UNESCO to help us.

MR. CHAIRMAN: If you delay changing the site, it will delay the project further. We do not want Agra to get into a situation like Venice. The monuments there have become unrecognizable, totally defaced and destroyed. They are passing a special Act to save Venice. Would it not be possible to shift Mathura refinery 30 or 40 miles?

SHRI NAYAR: Ninety per cent of the pollution from a refinery comes from two main sources: the chimney of the power plant, and the chimney of the crude distillation unit. Without these two, there is no refinery. If you want to remove them, there is no refinery left.

MR. CHAIRMAN: Out of Rs. 100 crores, how much is on the power plant?

SHRI NAYAR: Rs. 33 crores. This has already been constructed. The boiler turbine sets and other in puts have been put up.

MR CHAIRMAN: Can you not shift them to Etawah?

SHRI VOHRA: Technically you can dismantle it. but it would mean some wastage.

MR. CHAIRMAN: We were told that out of Rs. 100 crores already spent, about Rs. 15 crores on acquisition of land, civil works etc., and about Rs. 85 crores on items of equipment, which will not be a total waste, which can be removed.

Thank you.

The Committee then adjourned.

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