BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH AT NEW DELHI

IN O.A. 298 OF 2023

IN THE MATTER OF:

Dr. Raja Singh

……..Applicant

Vs.

Union of India, Through the Secretary, Ministry of Environment, Forests and Climate Change and Ors.

…….Respondents

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5.	**Annexure D:** Copy of the document from DGFASLI on details on 'National Study of Occupational Safety, Health and Working Environment in Asbestos-Cement Product Industries, 2019' where important considerations like disease latency and retired workers may not have been included.	35
6.	**Annexure E:** Copy of the position of ILO or International Labour Organisation dated 6th September 2010 which states that the Office has been *'promoting the elimination of the future use of all forms of asbestos and asbestos-containing materials'*	36-38
7.	**Annexure F:** Copy of Hon'ble Supreme Court judgment ***Education & Research Centre & Ors vs. Union of India & Ors 1995 3 SCC 42 dated 27/01/1995.***	39-62
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Dr Raja Singh s/o Gurmit Singh,
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Request for placing on record some documents which the applicant had mentioned in the second rejoinder dated 02.05.2024 which were not annexed as annexures along with some being weblinks and others that were made available to the applicant after the filing of the rejoinder dated 02.05.24 and which are directly related to the facts of the matter.

The humble applicant Most Respectfully Showeth:

1. In order to assist the Hon'ble Tribunal, the applicant most respectfully is requesting for attaching as annexures, some important documents which have been earlier already mentioned in the second rejoinder filed by the applicant in this current matter, OA 298/2023 before the Hon'ble Tribunal, but only may have been mentioned as weblinks in the pleadings.

2. Further, in support of some facts mentioned in the rejoinder dated 02.05.2024, the applicant has been able to get copies of relevant documents only after the rejoinder was filed, directly related to the facts mentioned in the rejoinder filed on 02.05.2024. The applicant wants to also assist the Hon'ble Tribunal humbly by attaching these as annexures with some description for easy linking the same with facts already mentioned before.

3. In para 15 of the rejoinder dated 02.05.2024 filed by the applicant, it was mentioned in subpart (d) that Indian cultural centre in Washington DC was delayed due to asbestos concerns. Apart from the parliamentary debates, the applicant has been able to get from the Ministry of External affairs, the Hazardous Building Material Survey Report from the Embassy of India, in Washington DC where chrysotile asbestos was present in building materials at 2 percent and was recommended to be abated. The report along with the reply to an RTI application by the applicant is attached as **Annexure A.**

4. In para 15, point (e), it was stated that Late Member of Parliament Shri George Fernandes had moved the *Hon'ble National Human Rights Commission in No. 693/30/97-98 on 11th August 1997.* The copy of the action in this matter from the website of NHRC where the order was to ***'Replace the asbestos sheets roofing made up of some other material that would not be harmful to inmates'*** is attached as **Annexure B.**

5. In para 20, the 'Vision Statement on Environment and Human Health' by the Ministry of Environment, Forests and Climate Change which stated in 4.3.1 that ***'Alternatives to asbestos may be used to the extent possible and the use of asbestos may be phased out'*** is attached as **Annexure C.**

6. In para 23, sub part (e), the study by Directorate General Factory Advice Service and Labour Institutes or DGFASLI under Minsitry of Labour, Government of India titled 'National Study of Occupational Safety, Health and Working Environment in Asbestos-Cement Product Industries' from 2019 is mentioned. The applicant wants to bring to record a reply from DGFASLI where some important questions regarding the study have been dealt with. These include:
    a. Apparent lack of consideration of long latency period of diseases in the study
    b. Apparent lack of inclusion of retired workers in the study.

The above is important as it was mentioned in ***Consumer Education & Research Centre & Ors vs. Union of India & Ors 1995 3 SCC 42*** which stated that record keeping shall be done and it was directed *'To maintain and keep maintaining the health record of every worker up to a minimum period of 40 years from the beginning of employment or 15 years after retirement or cessation of the employment, whichever is later.'* As the study excludes such workers, it may not tell the complete picture. The order of the appeal by the applicant from DGFASLI stating the above facts is attached as **Annexure D.**

7. In the same judgment, i.e., Consumer ***Education & Research Centre & Ors vs. Union of India & Ors 1995 3 SCC 42*** the Hon'ble Supreme Court had stated that recommendations by ILO will be kept into consideration in the future. Copy of the position of ILO or International Labour Organisation dated 6th September 2010 which states that the Office has been *'promoting the elimination of the future use of all forms of asbestos and asbestos-containing materials'* The position of ILO is mentioned as **Annexure E.** The full copy of the judgment ***Education & Research Centre & Ors vs. Union of India & Ors 1995 3 SCC 42*** is also attached as **Annexure F.**

PRAYER

Therefore, the humble applicant prays for the following:

1. The above-mentioned document and annexures may kindly be placed on record.
2. Suitable directions that the Hon'ble Tribunal may deem fit and appropriate.

For the above, the humble applicant shall forever be grateful.

(Applicant: Dr Raja Singh)
Date: 23rd July 2024
Place: New Delhi

Annexure A

सत्यमेव जयते

विदेश मंत्रालय, नई दिल्ली
MINISTRY OF EXTERNAL AFFAIRS
NEW DELHI

No. Q/GEM/551/02/2023-(pt) **dated 15 May, 2024**

To,
Shri Dr Raja Singh
E 205/206, GF, Amar Colony
Lajpat Nagar 4
New Delhi 110024

Subject : RTI Query No. MOEAF/R/T/24/00233 dated 02.05.2024 by Dr Raja Singh

Dear Sir,

Please refer to your RTI query as per subject mentioned above.

2. The requisite information to the RTI query is given hereunder:-

RTI	Query	Reply
1	Please provide a copy of the complete file including office orders, memorandum, circulars, notes or any other record or document related to the Indian property in question in Washington DC for a cultural centre.	**The requested information is exempted under Section 8(a) of RTI Act as it pertains to relations with a foreign country having bearing on bilateral relations.**
2	Please provide a copy of the complete file including office orders, memorandum, circulars, notes or any other record or document related to the asbestos problem and its consequence to the project or delay caused due to it	**A copy of the Email from E/I Washington on Asbestos problem is enclosed. (Annexure I)**
3	Kindly provide a copy of the report or any other document with any other name, which states the presence and or quantity of asbestos that has been found in the property in question in Washington DC	**A copy of the Hazardous Building Material Survey report is enclosed.(Annexure II)**
4	Please provide a copy of the recommendations that has been provided in order to deal with the asbestos issues in the property in Washington DC so that the same property can be used.	**The recommendations for Asbestos removal is mentioned in the above Survey Report. (Annexure II)**
5	Please provide the standard, guidelines, advisory, bye law or law that has been taken into consideration for declaration of the asbestos issues and or dealing with its proper use of any rehabilitation.	**All the related laws and regulations pertaining to Asbestos are available on public domain on EPA's website.**

6	Please provide the name of the agency involved with the removal of asbestos for the property in Washington DC	**The relevant agency for removal of asbestos is yet to be appointed.**
7	Please provide the harms of using buildings which have asbestos issues or have the presence of asbestos within them	**-Same as above in para 5**

3. In case you are not satisfied with the information furnished as above, an appeal can be filed with the first appellate authority within a period of thirty days from the date of issue of this letter as per the following details :-

Shri Y. K. Sailas Thangal,
AS (GEM), Room No. 3029,
Jawaharlal Nehru Bhawan, 23-D, Janpath,
New Delhi-11 Tel.23085125
Email: jsgem@mea.gov.i

Yours sincerely

(Deepak)
CPIO& US(GEM-1)
Phone No.; 01123088350
Email:usgem1@mea.gov.in

Annexure I

Email

No. WAS/Prop/872/02/2016 **October 27, 2017**

From : Indembassy Washington DC
To : Foreign New Delhi

Under Secretary (GEM-III) from SS (Property)

Reference Ministry's letter No.Q/GEM(REN)/872/44/2017 dated August 14, 2017 conveying sanction for testing and inspection of hazardous material from GOI's property located at 1438 U Street NW, Washington DC.

2. The work of inspection, investigation and testing of hazardous material was awarded to M/s Vertex Companies, Inc. The Company has carried out this work and has submitted a detailed report in two parts, i.e. **(i) Hazardous Material Report**, which contains Asbestos Containing Building Materials Survey, Lead Paint Screening, Polychlorinated Biphenyls (PCB), Light Ballast Assessment (summary of findings and recommendations), Mercury-containing Equipment Assessment, Bulk sample results, Bulk samples location, Photographic Documentation, XRF Analyzer Results, and **(i) Phase-I Environmental Site Assessment** (ESA), which analyzes the Recognized Environmental Conditions (REC), i.e. the presence or likely presence of any hazardous substance or petroleum products in, on, or at the property.

3. It is now proposed that we may issue another tender for comprehensive abatement and removal of hazardous material from the building. The entire report submitted by M/s Vertex Companies shall become part of the Tender which will serve as reference document to the prospective bidders.

4. A draft tender is attached herewith for Ministry's approval. Sine the report in two parts runs into 507 pages and its size is 35MB, we have created a Google link https://drive.google.com/open?id=0B4Fj0aTbBV3bQnZBMXhlWGdBRUE It is, therefore, requested that the report may be downloaded using this link.

With regards,

Prem Kumar

(Prem Kumar)

Enclosures:
i) Draft Notice for Inviting Tender
ii) HazMat Report + ESA Report on Asbestos

3.0 Asbestos Containing Building Materials Survey

3.1 Sampling Methodology

The Client has retained The Vertex Companies, Inc. to conduct an Asbestos-Containing Building Materials (ACBM) inspection, to identify suspect building materials as either asbestos-containing or non-asbestos-containing. Suspect building materials exist in the form of Thermal System Insulation (TSI), surfacing material, and miscellaneous materials.

The survey was performed by an experienced EPA-accredited asbestos inspector, who conducted a thorough inspection of representative areas throughout the building. Our objective was to identify multiple layers of flooring systems, as well as suspect building materials located within ceiling, wall and plumbing chases, or beneath carpeting. Bulk samples, representing individual homogenous areas of suspect materials, were collected in a randomly distributed manner, as summarized below.

The following illustrates the sampling strategy employed by VERTEX:

(a) Surfacing Materials:

In a randomly distributed manner, an accredited asbestos inspector collected bulk samples of surfacing materials, representative of each homogeneous area, and not assumed to be ACBM, as follows:

(1) Collect at least three bulk samples from each homogeneous area that is 1,000 ft^2 or less.

(2) Collect at least five bulk samples from each homogeneous area that is greater than 1,000 ft^2 but less than or equal to 5,000 ft^2.

(3) Collect at least seven bulk samples from each homogeneous area that is greater than 5,000 ft^2.

(b) Thermal Systems Insulation:

(1) In a randomly distributed manner, an accredited asbestos inspector collected, at a minimum, three (3) bulk samples of thermal systems insulation material, representative of each homogeneous area, and not assumed to be ACBM.

(2) An accredited asbestos inspector collected, at a minimum, one (1) bulk sample of patched thermal systems insulation, representative of each homogenous area, and not assumed to be ACBM, providing the section of patch was less than 6 linear or square feet.

(3) An accredited asbestos inspector collected, at a minimum, three (3) representative bulk samples of each insulated mechanical system not assumed to be ACBM, including, but not limited to cementitious material used on fittings such as tees, elbows, or valves. Representative sampling was conducted in a manner sufficient as to identify whether each homogenous area code is either asbestos or non-asbestos containing.

(4) Bulk samples were not collected (not required) from homogeneous areas where the accredited asbestos inspector determined that the thermal systems insulation was a non-suspect material (i.e., Fiberglass, foam glass, rubber, or any other non-ACM).

(c) Miscellaneous Materials:

An accredited asbestos inspector collected, at a minimum, one (1) representative bulk sample of each miscellaneous material not assumed to be ACBM, including, but not limited to ceiling tiles, floor tiles and associated floor tile mastic, etc. Representative sampling was conducted in a manner sufficient as to identify whether each homogenous area is either asbestos or non-asbestos containing.

For the purpose of this report, VERTEX has classified the identified ACBMs as being in either Good, Fair or Poor condition. The following are the general definitions of each category:

Good Condition	Material which is intact with no noticeable damage
Fair Condition	Material with a small amount of overall or localized damage (generally less than 10% of the entire area).
Poor Condition	Material with a large amount of damage (generally greater than 10% of the entire surface area).

3.2 Asbestos-Containing Building Materials

TABLE I.– BULK SAMPLING RESULTS contains a listing of suspect ACBM identified and sampled by VERTEX from the commercial office property located at 1438 U Street NW in Washington, DC. This table includes the sample number, material description, sample location and analytical result of each bulk sample.

Table I– Bulk Sample Results

Sample Number	Material Description	Sample Location	Analytical Result
DD-082917-01	Perimeter Drywall Wall	At U Street Wall	NAD
DD-082917-02		At Eastern Street Wall	NAD
DD-082917-23		From Western Wall	NAD
DD-082917-03	Perimeter Joint Compound	At U Street Wall	NAD
DD-082917-04		At Eastern Street Wall	NAD
DD-082917-24		From Western Wall	NAD
DD-082917-05	Column Drywall	From Second Row at West	NAD
DD-082917-06		From Third Row at East	NAD
DD-082917-25		From Rear Column	NAD
DD-082917-07	Column Drywall Joint Compound	From Second Row at West	NAD
DD-082917-08		From Third Row at East	NAD
DD-082917-26		From Rear Column	NAD
DD-082917-09	Yellow Glue on Top of Red Painted Flooring	At Front of Floor	NAD
DD-082917-10		At Eastern Side	NAD
DD-082917-11	Black Residual Mastic on Floor	At U Street Side	NAD
DD-082917-12		At Rear Side of Floor	NAD
DD-082917-13	Gray/Beige Flooring Material	From Front Side	NAD
DD-082917-14		From Rear Side	NAD
DD-082917-15	White Skim Coat Plaster Wall	From Perimeter Wall at Stairwell	NAD
DD-082917-16		From Western Perimeter Wall	NAD
DD-082917-17	Gray Coat Plaster Wall	From Perimeter Wall at Stairwell	NAD
DD-082917-18		From Western Perimeter Wall	NAD

Sample Number	Material Description	Sample Location	Analytical Result
DD-082917-19	**Floor Tile**	**At Entrance to Elevator**	**2% Chrysotile**
DD-082917-20		**At Entrance to Elevator**	**2% Chrysotile**
DD-082917-21	Black Mastic associated with Floor Tile	At Entrance to Elevator	NAD
DD-082917-22	Black Mastic associated with Floor Tile	At Entrance to Elevator	NAD
DD-082917-27	Flooring Material on Stair Steps	Stairwell from Rear	NAD
DD-082917-28		Stairwell from Front	NAD
DD-082917-29	**9" x 9" Gray Floor Tile**	**At Eastern Side of 2nd Floor**	**2% Chrysotile**
DD-082917-30		**At Eastern Side of 2nd Floor**	**2% Chrysotile**
DD-082917-31	Black Mastic associated with DD-082917-29	At Eastern Side of 2nd Floor	NAD
DD-082917-32	Black Mastic associated with DD-082917-30	At Eastern Side of 2nd Floor	NAD
DD-082917-33	Black underlayment Paper associated with Flooring Materials	At Northern Side of 2nd Floor	NAD
DD-082917-34		At Southern Side of 2nd Floor	NAD
DD-082917-35	Linoleum Flooring Greenish Color	At Northern Side of 2nd Floor	NAD
DD-082917-36		At Northern Side of 2nd Floor	NAD
DD-082917-37	Brown Mastic associated with DD-082917-35	At Northern Side of 2nd Floor	NAD
DD-082917-38	Brown Mastic associated with DD-082917-36	At Northern Side of 2nd Floor	NAD
DD-082917-39	Gray Coat Plaster at Skylight Ceiling	At Rear Side of 2nd Floor	NAD
DD-082917-40		At Rear Side of 2nd Floor	NAD
DD-082917-41	White Skim Coat Plaster Skylight Ceiling	At Rear Side of 2nd Floor	NAD
DD-082917-42		At Rear Side of 2nd Floor	NAD
DD-082917-43	2' x 4' Ceiling Tile	At Stairwell from Front	NAD
DD-082917-44		At Stairwell from Front	NAD
DD-082917-45	**Mudded Pipe Insulation Inside Brick Wall**	**Basement Area**	**20% Chrysotile**
DD-082917-46		**Basement Area**	**12% Chrysotile**
DD-082917-47	Old Plaster Ceiling	Basement Area	NAD
DD-082917-48		Basement Area	NAD
DD-082917-49	Black Waterproof Material on Wall	Basement Area	NAD
DD-082917-50		Basement Area	NAD
DD-082917-51	White Skim Coat Plaster Wall	At Stairwell to Basement	NAD
DD-082917-52		At Stairwell to Basement	NAD
DD-082917-53	Gray Coat Plaster Wall	At Stairwell to Basement	NAD
DD-082917-54		At Stairwell to Basement	NAD
DD-082917-55	**Black Roof Flashing Caulk**	**Roof Area**	**20% Chrysotile**
DD-082917-56	**Silver Roof Paint**	**Roof Area**	**2% Chrysotile**
DD-082917-57	Window Exterior Caulking	U Street Side	NAD
DD-082917-58	Door Exterior Caulking	U Street Side	NAD

NAD – No Asbestos Detected

TABLE II – ASBESTOS-CONTAINING BUILDING MATERIALS contains a listing of regulated ACBM identified from the commercial office property located at 1438 U Street NW in Washington, DC. This table includes the material description, material location, U. S National Emission Standard for Hazardous Air Pollutants (NESHAP) Category, general material condition, and estimated quantity.

Table II – Asbestos-Containing Building Materials

Material Description	Material Location	Friable	NESHAP Category	Condition	Estimated Quantity
Floor Tile	1st Floor At Entrance to Elevator	N	CAT I	Good	10 SF
9" x 9" Floor Tile	2nd Floor At Eastern Side	N	CAT I	Fair	40 SF
Mudded Pipe Insulation Inside Brick Wall	Basement Area	Y	RACM	Fair/Good	15 LF
Black Roof Flashing Caulk	Roof	N	CAT II	Fair/Good	500 LF
Silver Roof Paint	Roof	N	CAT II	Fair/Good	5,000 SF

LF – Linear Feet
SF – Square Feet
RACM – Regulated Asbestos-Containing Material
CAT I – Category I Non-Friable Asbestos Containing Roofing, Flooring and Gaskets/Packing
CAT II – Category II Non-Friable Asbestos Containing Material

VERTEX offers the following observations with regards to the limited asbestos inspection:

- All other suspect materials uncovered during further renovation activities not identified within this report, should be assumed to be asbestos-containing, unless future bulk sampling determines otherwise.

Bulk samples of suspect materials were analyzed by AMA Analytical Services, Inc. (AMA), of Lanham, Maryland using the approved Polarized Light Microscopy with Dispersion Staining (PLM/DS) method. Only the asbestos content, if any, is recorded in the bulk sample 'Report of Analysis' (Appendix E). If a material contains greater than 1% asbestos, it is considered to be asbestos-containing material. Upon client request, or at the recommendation of the analyst, the 'PLM-NOB,' or 'TEM' analysis may be used to verify the presence/absence of asbestos when a sample contains less than 10% asbestos by visual estimate.

AMA is accredited laboratories by the EPA for "Interim Asbestos Bulk Sample Analysis Quality Assurance Program". AMA Analytical Services, Inc. is also accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). The PLM/DS analytical method is modeled after 40 CFR Part 763, Subpart F, Appendix A: "Interim Method for the Determination of Asbestos in Bulk Insulation Samples".

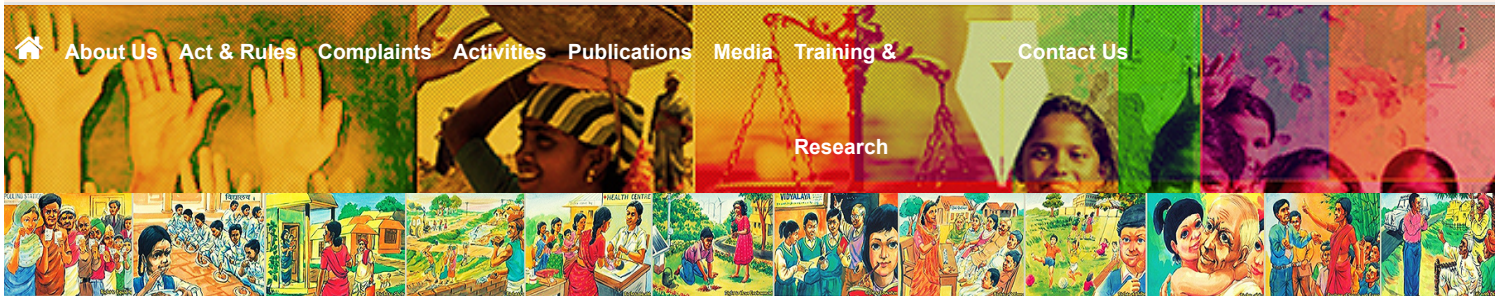
3.3 Recommendations

The identified asbestos-containing building materials a were observed to be in fair to good condition. A contractor holding a current District of Columbia Department of Energy and Environment (DOEE) asbestos abatement contractor license should perform abatement of all identified ACBMs prior to renovation.

It is recommended that suspect materials not identified within this report and uncovered during any future demolition activities be assumed to be asbestos-containing, unless future bulk sampling determines otherwise.

राष्ट्रीय मानव अधिकार आयोग, भारत
NATIONAL HUMAN RIGHTS COMMISSION, INDIA

Menu



DalitCases

Atrocities On Dalits / Member Of Minority Community /Disabled

Year 1999-2000

Facilities for foreign nationals detained at Lampur Seva Sadan, Delhi (CASE NO:693/30/97-98)

Harassment of denotified and nomadic tribals belonging to the Pardhis community in Bighwan Village, Pune, Maharashtra (CASE NO:512/13/98-99)

Atrocities inflicted on a family in Maharashtra (CASE NO:1361/94-95/NHRC)

Death of workers in silicon factories of Madhya Pradesh (CASE NO:7894/96-97/NHRC)

Rehabilitation of physically handicapped, Madhya Pradesh (CASE NO:1528/96-97/NHRC)

Violation of human rights of members of Reang community of Mizoram (CASE NO:40/16/97-98)

Year 2000-2001

Atrocities on Dalit Women by Forest Officials, U.P.(CASE NO:2731/96-97/NHRC)

Seven Boys from Balmiki Community paraded naked by police, Haryana (CASE NO:393/7/1999-2000)

Year 2001-2002

Killing of 7 Dalits by Upper Castes, Karnataka (CASE NO:628/10/1999-2000)

Year 2002-2003

Atrocities on Scheduled Castes/Scheduled Tribes – killing of five Dalits: Haryana (Cases No.1485/7/2002-2003)

Suicides of farmers: Andhra Pradesh (Case No.444/1/2001-2002/FC)

Year 2003-2004

Death of Officiating Headmaster of Government School, Rajasmand: Rajasthan (Case No.1727/20/2001-2002)

Rehabilitation of Leprosy Patients Camping in Amarjyoti Leprosy Rehabilitation Society: Haryana (Case No.2135/7/2002-2003)

Provision of Seats in All Medical Courses for Physically Handicapped Candidates: Delhi (Case No.1023/30/2002-2003)

Year 2004-2005

Atrocities on Adivasi families by forest officials of Wayanad District : Kerala - Case No. 199/11/2002-2003(FC)

Merciless beating of Smt. Susheela Devi by landlord and his accomplice, West Champaran District. Bihar - Case No. 1852/4/2002-2003(WC)/FC

Year 1999-2000

Facilities for Foreign Nationals detained at Lamapur Seva Sadan : Delhi (Case No.693/30/97-98)

While considering the petition concerning the possible deportation of Shri Rongthong Kuenley Dorji, it came to the notice of the Commission that he had been detained at Lampur Seva Sadan, an institution for rehabilitation of beggars, administered by the Social Welfare Department of Government of NCT of Delhi. On 24 May 1999, the Commission directed the Director General (Investigation) [DG(I)] of the Commission to visit Lampur Seva Sadan to make an assessment of the conditions prevailing therein. After his visit to Lampur Seva Sadan, DG(I) submitted his report in which he stated that the foreigners were confined to a few barracks in one segregated corner of the campus, with a compound wall and a gate. Security was being provided by a section of the Rajasthan Armed Constabulary.

After considering the report, the Commission recommended that separate enclosures be created for foreign nationals and that the Government of NCT of Delhi undertake immediate repairs and to take the following steps to improve the arrangements:

(i) Replace the asbestos sheets roofing with roofing made up of some other material that would not be harmful to inmates.

(ii) Post adequate number of conservancy staff immediately for the cleanliness of the area and for the maintenance of the toilets/bathrooms.

(iii) Make separate cooking arrangements for the foreigners instead of supplying them food from the beggars home as that might hurt their sentiments and sense of dignity.

(iv) Consider provision of separate STD/ISD booths for use of the foreign detenues.

(v) Establish MI Room where a doctor and the para-medical staff are available round the clock for medical cover.

(vi) Issue proper instructions to ensure regular visits by senior officers to this detention centre.

The Commission also directed the Principal Home Secretary, Secretary and Director, Social Welfare Department and the FRRO of the Delhi Administration to visit the Lampur Seva Sadan and work out a proper strategy for bringing about ameliorative changes not only for the foreign detenues but also for the institutions for beggars located in the campus. The Commission has received a compliance report.

Harassment of denotified and nomadic tribals belong to Pardhis community in Bighwan village, Pune, Maharashtra Case No.512/13/98-99

Shri G.N. Devy, Secretary, Denotified & Nomadic Tribals Rights Action Group, Baroda, Gujarat submitted a complaint to the Commission alleging atrocities on the Pardhis community, a denotified community of tribals living in the backwaters on the banks of the Ujni Dam, Bigwan village, Taluk Indiapur, Pune, Maharashtra by persons in plain clothes serving in the Railway Police on 12 July 1998. It was further alleged that their houses, fishing nets, boats and other materials were burnt. The police had also beaten up the women of the community, including pregnant women and had attempted rape on two teenaged girls.

Annexure C

Vision Statement on Environment and Human Health

1. PREAMBLE

Environmental health comprises those aspects of human health including quality of life that are determined by physical, biological, social and psychological factors in the environment. The relationship between the environment and its impact on human health is highly complex. Each of the effects is associated with a variety of aspects of economic and social development. Moreover, there is no single best way of organising and viewing the development-environment-health relationship that reveals all important interactions and possible entry points for public health interventions. Human beings are exposed to a variety of chemicals including industrial chemicals, pesticides, air pollutants, natural and man made toxicants etc in the environment through the skin, respiratory system and gastrointestinal tract that can affect vital body systems such as pulmonary, reproductive and nervous and immune system. Dysfunction of these systems could have far-reaching consequences, which affect individuals and even their progeny from serious health ailments. To investigate possible effects of environmental pollutants on human health it is of prime importance that accurate exposure assessment techniques and validated biomarkers are available. It is, therefore, essential to have full fledged and accurate Environmental Health Impact Assessment procedures in place, undertake application-oriented research such as occupational and environmental cohort studies to define single or mixture of pollutants and their impacts on health. This would help the implementing agencies to revise the environmental and industry specific actions. It is also very important to have collaborative approach among the industries and various technical/research centers together with the implementing agencies of the pollution control so as to deal with the Environment and Health issues properly.

1.1 Children are more susceptible in contracting diseases due to exposure to air pollutants and hazardous chemicals, ingesting contaminated water, food and soil. These problems are magnified due to lack of access to safe drinking water and sanitation, haphazard disposal of hazardous and bio-medical wastes. A growing number of diseases in children have been linked to environmental exposures. These diseases range from traditional water borne, food borne and vector borne ailments and acute respiratory infections to asthma, cancer, arsenicosis, fluorosis, certain birth defects and developmental disabilities. Children from the fetal stage through adolescence are in a dynamic stage of growth as their immature nervous, respiratory, reproductive and immune system develop. They are more vulnerable to permanent and irreversible damage from toxicants than adults.

1.2 Ministry of Environment and Forests (MoEF) constituted a Committee on Environment and Health in July, 1999 and the report was submitted in May, 2000. The Report of the "Committee on Environment and Health" has brought out issues requiring attention of various stakeholders. The "Conference on Environmental Health" organized by Ministry of Environment and Forests in November, 2002 has brought out thrust areas and action points that need to be implemented for protection of public health.

2. THE PROBLEM

The environment in which we live greatly influences our health. The household, workplace, outdoor and indoor environments may pose risks to health in a number of different ways. The poor quality of air which we may breathe, the contaminated water we may drink and the surroundings in which we live, determine our quality of life. While the genetic factors may also be responsible for causing diseases but the environmental factors play much more active role in contracting various diseases.

2.1 Water

It is estimated that 75 to 80% of water pollution by volume is caused by domestic sewage. The remaining is industrial wastewater, which could be more toxic. The major industries causing water pollution include: distilleries, sugar, textile, electroplating, pesticides, pharmaceuticals, pulp & paper mills, tanneries, dyes and dye intermediates, petro-chemicals, steel plants etc. Non-point pollution sources such as fertilizer and pesticide run-offs in rural areas from the agricultural fields are also emerging as a major cause of concern. Only 60% of chemical fertilizers is utilised in soils and the balance is leached into soil polluting ground water. Excess phosphate run-off is leading to eutrophication in lakes and water bodies. Adverse health outcomes are associated with ingestion of contaminated water, lack of access to sanitation, contact with unsafe water, and inadequate management of water resources and systems including in agriculture. Infectious diarrhoea makes the largest single contribution to the burden of disease associated with unsafe water, sanitation and hygiene. Besides, the water borne diseases like cholera, jaundice and other gastrointestinal track infections are quite significant amongst the population. Certain diseases have also been encountered amongst the affected persons coming in contact with toxic effluent discharged in the water bodies by highly polluting industries.

2.2 Ground Water Pollution

Due to improper drainage and lack of proper disposal facilities, industries and local bodies use large areas of land as mode of disposal of wastewater. Small-scale industries located in clusters or industrial estates, not having proper disposal facilities are also causing ground water pollution due to discharge of industrial effluent on land. Several incidents of ground water contamination due to industrial clusters are reported specially due to electroplating units,

tanneries, dyeing and printing units etc. Heavy metals and other toxic compounds present in the effluent may pose considerable health risks amongst the population using such contaminated water.

2.2 Air pollution

The main sources of air pollution are from vehicles and industries and to some extent from domestic sources. Urban air pollution is largely and increasingly the result of the combustion of fossil fuels for transport, power generation and other human activities. Combustion processes produce a complex mixture of pollutants that comprises emissions, such as diesel soot particles and lead, and the products of atmospheric transformation, such as ozone and sulfate particles formed from the burning of sulfur-containing fuel. Air pollution from combustion sources is associated with a broad spectrum of acute and chronic health effects. Particulate air pollution may cause the most serious effects on lungs, including lung cancer and other cardiopulmonary mortality. Other constituents, such as lead and ozone, are also associated with serious health effects, and contribute to the burden of disease attributable to urban air pollution. Air Polluting industries include: thermal power plants, iron and steel plants, smelters, foundries, stone crushers, cement, refineries, lime kilns chemicals & petro-chemical plants etc. Burning of low-grade fuel in urban areas for various purposes is one of the causes of air pollution. In addition, tyre, rubber, plastic, garbage etc. are also burnt. Such combustion emits toxic pollutants including dioxins and furans, which are quite harmful to the human beings.

2.3 Indoor air pollution

Cooking and heating with solid fuels such as dung, wood, agricultural residues or coal are the largest source of indoor air pollution. When used in simple cooking stoves, these fuels emit substantial amounts of pollutants,

including respirable particles, carbon monoxide, nitrogen and sulfur oxides. Studies have shown reasonably consistent and strong relationships between the indoor use of solid fuel and a number of diseases. The poor people in the developing nations use unprocessed fuels in their houses. It has been estimated that more than half of the world's house-holds cook their food on the unprocessed solid fuels that typically release about 50 times more noxious pollutants than gas. The stoves or *chullah* used as cooking stove are not energy efficient. The fuels are not burned completely. The product of incomplete combustion of biomass includes carbon monoxide, hydrocarbons, suspended particulate matter and Polycyclic Aromatic Hydrocarbon (PAH) etc. Indoor air pollution may manifest respiratory ailments such as cough, dysponea and abnormal lung function, if proper ventilation is not existing and the duration of exposure is quite significant. The presence of mutagens in organic residues of smoke particles also aggravate the respiratory ailments. The women and children, particularly those of the rural sector using agricultural residues as cooking fuel are the most vulnerable groups and may get affected by the indoor air pollution.

2.5 Noise Pollution

Increase in vehicular traffic and commercial activities are major cause of noise pollution in urban areas. Use of loud speakers, diesel generator sets, high pitched music systems, bursting crackers, etc are adding to noise levels in cities. It has been reported that people living in noisy areas have been found with impairment in their hearing system.

2.6 Bio-Medical Waste

Bio-medical wastes comprise of human tissues, blood soaked items, excreta, drugs, swabs, disposable syringes, needles, sticky bandages, radioactive wastes etc. These wastes are potentially hazardous and infectious.

Indiscriminate disposal of such wastes poses health risk to human population, especially to health care personnel, sanitary workers, scavengers, rag pickers and also to intra-venous drug users. It is of utmost importance that the medical waste is managed in an environmentally sound manner which requires proper understanding of risk associated with the disposal of such wastes and methods for proper segregation, storage, handling, treatment and disposal. The children and women are most vulnerable groups of society to develop infectious diseases as they are basically engaged as rag pickers in the dump sites. Incinerators, without having proper combustion temperature and control system, used for burning of bio-medical wastes, may also pose health risks to the population living close to such incinerators.

2.7 Climate change and allergens

Potential risks to human health from climate change would arise from increased exposures to thermal extremes (cardiovascular and respiratory mortality) and from increases in weather disasters (including deaths and injuries associated with floods). Other risks may arise because of the changing dynamics of disease vectors (such as malaria and dengue fever), the seasonality and incidence of various food-related and waterborne infections, the yields of agricultural crops, the range of plant and livestock, pests and pathogens, the salination of coastal lands and freshwater supplies resulting from rising sea-levels, the climatically related production of photochemical air pollutants, and the risk of conflict over depleted natural resources. Effects of climate change on human health can be expected to be mediated through complex interactions of physical, ecological, and social factors. These effects will undoubtedly have a greater impact on societies or individuals with scarce resources, where technologies are lacking, and where infrastructure and institutions (such as the health sector) are least able to adapt. For this reason, a better understanding of the role of socio-economic and technological factors in shaping and mitigating these impacts is essential. Because of this complexity,

current estimates of the potential health impacts of climate change are based on models with considerable uncertainty. Besides, the spores, pollens, allergens produced by cats and dogs and dust mites may pose health risks to human beings.

3. FUTURE STRATEGY AND ACTION PLAN

The key purpose of this Vision Statement on Environment and Human Health is to evolve a strategy for health risk reduction. It also offers a comprehensive approach to the environmental health management plans, which would be a systematic approach to estimate the burden of disease and injury due to different environmental pollutants.

The Rio Declaration on Environment and Development states, inter alia, "Human beings are at the centre of concerns for sustainable development, and that they are entitled to a healthy and productive life, in harmony with nature. The goals of sustainable development can only be achieved in the absence of a high prevalence of debilitating diseases, while obtaining health gains for the whole population requires poverty eradication. There is an urgent need to address the causes of ill health, including environmental causes, and their impact on development, with particular emphasis on women and children, as well as vulnerable groups of society, such as people with disabilities, elderly persons and indigenous people". The World Summit on Sustainable Development at Johannesburg, South Africa, 26 August- 4 September 2002 states, inter alia: "Integrate the health concerns into strategies, policies and programmes for poverty eradication and sustainable development, reduce respiratory diseases and other health impacts resulting from air pollution, with particular attention to women and children, by strengthening regional and national programmes including through public-private partnerships with technical and financial assistance to developing countries, supporting the phasing out of lead in gasoline; strengthening and supporting efforts for the

reduction of emissions through the use of cleaner fuels and modern pollution control techniques ...."

International and national deliberations have made it evident that environment-and-health concerns are rising higher on the broad environment and development agenda and that public health issues are predominantly making a niche on the environmental agenda and vice-versa. Environmental Health is an inter-disciplinary and inter-agency subject and all the stakeholders are needed to be involved in the process. To make environmental health a really potent force in the consorted approach towards health for all and sustainable development in the 21st Century, the role of the MoEF in this transformation of environmental health is significant. Therefore, all the future studies pertaining to environmental health would accomplish the following broad tasks:

- To provide scientific information and data on the relationship between environmental factors and health in the process of development.
- To develop health based criteria in preparation of national standards/legislations.
- To build partnership with national, international and non-governmental agencies etc.
- To promote the role of environmental health in the policy, planning and decision making in the matter of environment and development.

Therefore, the activities and programmes are required to be taken up for the protection of the public health due to environmental pollution as given in the following road map for action.

4. ROAD MAP FOR ENVIRONMENTAL HEALTH

The road map is broadly based on the recommendations emerging out of the discussions held in the Conference on Environmental Health organized by MoEF in New Delhi from 20th to 21st November, 2002.

4.1 Air Pollution and Health Effects

4.1.1 Environmental health risk assessment studies due to air pollution are required to be undertaken in the polluted areas to establish the baseline data on health impacts/risks in different parts of India taking into account the studies undertaken earlier by different organizations. Possibilities to find out the manifestations of various diseases attributable to air pollution may be explored. In particular, the human settlements including children and elderly persons living close to industrial complexes, metropolitan cities and taxi/bus drivers, traffic policemen, road side vendors, shopkeepers etc. are required to be covered under environmental health assessment studies. Such studies would assist in establishing the disease burden in different areas in the country. Studies to develop bio-markers may also be taken up. Toxico-genomics studies are also required to be taken up.

4.1.2 As Total Suspended Particulate Matter (TSPM)/ Respirable Suspended Particulate Matter (RSPM) levels are generally exceeding in most of the cities/towns in India including the metropolitan and large cities, it would be desirable to investigate the health impacts due to particulates and gaseous pollutants including synergistic effects so as to control the emissions from various sources e.g. industries, automobiles, open burning of garbage, leaves, plastic, rubber materials etc. Loose soil accumulated on road sides or elsewhere due to natural or man-made activities becomes air borne and gets re-suspended and as such may

pose considerable respiratory diseases should also be controlled and the concerned organisations should take suitable measures in this regard.

4.1.3 Stricter emission norms for particulates and gaseous pollutants (e.g. limit for lead, mercury, benzene, polycyclic aromatic hydrocarbon (PAH)) based on health impacts are required for which Ministry of Environment and Forests (MoEF)/Central Pollution Control Board (CPCB)/ State Pollution Control Boards (SPCBs) may review the existing standards and notify the revised standards for control of emissions of particulates and gaseous pollutants from different industries and power plants. Ambient air quality standards are also required to be reviewed and revised based on health criteria.

4.1.4 Open burning of garbage, leaves, plastic, rubber and other synthetic materials should not be allowed and necessary legal and enforcement machinery may be provided to check the menace.

4.1.5 Strengthening and modernization of air quality monitoring system specially covering Respirable Particulate Matter having particulates of diameter not more than 10 and 2.5 microns respectively (PM_{10}/$PM_{2.5}$), Oxides of Nitrogen (NOx), Oxides of Sulphur (SOx) and Carbon Mono Oxide (CO) are required to be undertaken. Periodic monitoring of sulphates, nitrates, ground level ozone, Persistent Organic Pollutants (POPs) and other toxins are also required to be undertaken. In addition, inventorisation and source apportionment studies are also required to be undertaken in different areas having air pollution problems.

4.1.6 Indoor Air Pollution and Health Impact Studies should be undertaken specially covering women and children.

4.1.7 Clean technologies are required to be adopted by Thermal Power Plants to check gaseous and particulate emissions.

4.2 Water Pollution and Health Effects

4.2.1 Policy interventions need to be taken up by the concerned departments engaged in water supply and sanitation particularly in the rural and slum areas for checking water borne diseases. Environmental epidemiological studies are required to be undertaken to find out and evaluate the magnitude of health impacts and to develop strategies to prevent and control water borne diseases.

4.2.2 Industrial effluent standards need to be reviewed and modified based on health risks considerations.

4.2.3 Toxic effluents should not be allowed to be discharged into the water bodies and emphasis should be made on zero discharge by way of recycling and reuse by such industries to the maximum extent possible.

4.2.4 The uptake of heavy metals by vegetables, cereals, fruits, grains etc. have been reported in certain areas and as such the consumption of such contaminated food has to be checked by the concerned Department of the Central/State Governments. Hence the irrigation of agricultural fields with the treated/untreated effluent containing toxic chemicals, pesticides and heavy metals such as chromium, lead, mercury, arsenic etc. should not be allowed. Short term and long term health studies are required to be undertaken.

4.2.5 Health Risk Studies due to naturally occurring arsenic and fluoride in the ground water be undertaken in the areas affected by these contaminants. Policy interventions in endemic areas are needed to supply treated water or alternate drinking water and ensure health improvement of the community.

4.2.6 Adequate Monitoring and Surveillance System is needed to be created by the regulatory authorities to check surface and ground water contamination. Food contamination due to Arsenic and Fluoride in the endemic areas are also required to be checked by taking policy interventions including stopping of irrigation of agricultural fields with contaminated water.

4.2.7 Studies regarding vector diseases (Malaria etc.) are required to be taken up in the areas where large quantities of impoundment of water have taken place due to construction of hydro-electric projects, dams, reservoirs etc. Also in such areas, due to accumulation of pesticides in the water bodies due to agricultural run-offs, the concentration of pesticide residues in human beings might have gone up due to consumption of aquatic food and as such health risk studies would be useful to find out the extent of environmental problems posed to the population living in such areas.

4.3 Hazardous Wastes and Health Effects

4.3.1 Environmental epidemiological studies are required to be carried out near to industrial estates and hazardous waste disposal sites to estimate the extent of health risks including from asbestos. Alternatives to asbestos may be used to the extent possible and use of asbestos may be phased out.

4.3.2 Untreated/partially treated hazardous waste emanating from industries should not be disposed on land, road sides, water bodies, municipal garbage dump sites etc. Industrial wastes should be handled, treated and disposed of in secured landfill as per the provisions of the

Hazardous Waste Management Rules to avoid possibility of ground water contamination and consequential health implications.

4.3.3 The plastic wastes need to be properly treated for disposal. Public awareness for plastic recycling and the R & D for degradable plastic need to be intensified.

4.3.4 State Industrial Development Authorities should adopt proactive approach to provide necessary infrastructure for collection, treatment and disposal of hazardous waste emanating from various industrial estates including secured landfill site. Action plans based on appropriate technologies and control measures are required to be taken for the treatment and disposal of hazardous wastes.

4.3.5 The regulatory authorities (CPCB/SPCBs/PCCs) should ensure, through the consent mechanism that adequate steps are taken by the industries for safe disposal of hazardous wastes. Inventorisation of hazardous waste is needed and guidelines for treatment and disposal be evolved.

4.3.6 Heavy metals used in ayurvedic medicines may pose health risks and as such toxicological studies may be taken up preferably by the Industrial Toxicological Research Center (ITRC) to find out any adverse health impacts due to use of such ayurvedic medicines.

4.3.7 Specifications and standards for incinerators may be evolved based on health criteria and mechanisms to test and certify the efficacy may be set up in the country.

4.4 Children's Environmental Health

4.4.1 Environmental health risk assessment studies for children including those living in slums and polluted areas with respect to water borne diseases, lead contamination and respiratory ailments due to air pollution including asthma are required to be undertaken. Also studies to find out impact on nervous system may be undertaken. Standardisation of procedures for health risk evaluation are also to be taken up including quality assurance. Health risk studies due to disposal of hazardous wastes and bio-medical wastes are also required to be undertaken to take mitigative measures.

4.4.2 Environmental Health Studies (EHS) for children are also required to be undertaken in the areas having arsenic, chromium, mercury, fluoride, and nitrate and pesticide contamination including pre-natal ailments. Also, EHS are required to be undertaken for endocrine disruptors.

4.4.3 Indoor air pollution poses health risks to children and as such environmental health studies are required to be commissioned to collect baseline data.

4.4.4 Environmental Health awareness programmes amongst the children including those living in rural and slum areas and belonging to lower strata of society are required to be taken up including personal hygiene and sanitation aspects.

4.5 Radiation and Health Effects

The high frequency electromagnetic radiations have become a high risk to human health, vegetation etc. The electromagnetic radiations are caused due to the increased use of wireless communications across the world and also due to radiations from the satellite towers and systems, which transmit high rates of data for the intranet and internet. Radiation from cellular gazettes may also pose threat to human health such as adverse impact on brain and eye cancer,

heart ailments, migraine, head and ear pain, fatigue, energy loss, impotency and many other physical disorders. Environmental Health Impact Studies due to electromagnetic radiations (non-ionising radiations) may be undertaken. Similarly, studies are also required to be undertaken on health risks posed by exposure to ionizing radiations.

4.6 Noise Pollution and Health Effects

Use of loud speakers, diesel generator sets, high pitched music systems, bursting crackers, increase in vehicular traffic and commercial activities, etc are adding to noise levels in cities. The noise pollution may affect the hearing system, increase blood pressures, induce behavioral changes as also may cause adverse effect on the nervous system. Environmental Health Impact Studies due to noise pollution may also therefore be undertaken so as to have policy intervention for the protection of public health..

4.7 Climate change and health effects

The change in climate would pose potential health risks (morbidity and mortality) due to rise in temperature resulting in to cardiovascular and respiratory ailments due to altered exposures to photo-chemical pollutants and allergens (spores, moulds etc.). The Climate change may also give rise to vector borne diseases (malaria, dengue, fever, leishmamiasis etc) as also water borne infections. Other impacts may include incidences of food poisoning, water borne pathogens induced diseases etc. Effects of climate change on human health can be expected to be mediated through complex interactions of physical, ecological, and social factors. A better understanding of the role of socio-economic and technological factors in shaping and mitigating these impacts is essential. Besides, the studies on health risks to human beings from the pollens, allergens produced by cats and dogs and dust mites are also required to be undertaken.

4.8 Institutional Strengthening and Information Systems

4.8.1 The Environment and Human Health Cell (EHHC) created in MoEF needs to be strengthened. The EHHC in MoEF will be the nodal agency for environmental health related issues including collaboration and coordination with the National and International Agencies for carrying out the programmes and activities pertaining to environmental health.

4.8.2 There is a need to have a National Institute of Environmental Health Sciences (NIEHS) with regional centers. This could be done, to start with, by strengthening one of the existing institutions as a National Institute of Health Sciences (NIEHS) to serve as the nodal Institution/laboratory in Environmental Health Sciences and create a network of regional Environmental Health Centers in R&D institutions, medical colleges and Universities. These will play vital role in pursuing environmental health related studies (viz. dioxins, furans, Polychloro Biphenyls (PCBs), heavy metals, benzenes etc.), R & D technology and human resource development.

4.8.3 Occupational and environmental health issues are required to be looked into in an integrated way so as to have holistic view regarding the occupational and environmental hazards on human health. Interaction and cooperation of the concerned institutions/organizations will be sought in evolving programmes and activities in this regard.

4.8.4 Training modules and programmes in environmental health are required to be developed for professionals in different organisations dealing with public health, environmental regulations and policy makers. Specific issues on environmental health including antidotes for various toxic chemicals, gases and

pesticides may be documented and disseminated for public information and use by Primary Health Care Units, nursing homes and hospitals.

4.8.5 Environmental health education awareness programmes for communities including women and children are required to be undertaken through media (TV channels etc.). Environmental health related subjects are required to be added in curricula in all the technical and medical institutions. Indian National Science Academy (INSA), University Grants Commission (UGC), Indian Medical Association (IMA), Ministry of Education etc may be involved in developing environmental health educational programmes/subjects for inclusion in the respective formal and non-formal education courses.

4.8.6 There is a need to modify the existing record and registration systems in the medical treatment in the hospitals and nursing homes by augmenting infrastructure and including occupational and environmental history in the treatment of diseases including compilation of morbidity & mortality data attributable to environmental factors for protection of public health against environmental pollution. Steps may be taken for codification of diseases and working out National Burden of Disease (NBD).

4.8.7 National Emergency preparedness and Response system including disaster management due to terrorist activities should be in place involving concerned Central/State/Local level departments and organisations so as to have intersectoral and inter-institutional approach.

4.8.8 Biological threshold limits (BTLVs) for toxic chemicals, pesticides and heavy metals (lead, mercury, chromium, arsenic etc.) and fluoride may be prescribed. Besides, Threshold Limit Values (TLVs) for benzene, benzopyrene, Poly Aromatic Hydrocarbon (PAH) etc. may also be prescribed.

4.8.9 The Ministry of Environment and Forests need to have cooperation and collaboration with the national and international institutions/ agencies (e.g. WHO, UNEP, UNDP, USEPA, CDC (USA), NIEH (USA), Universities etc) to develop specific strategies on environmental health.

5. PUBLIC PARTNERSHIP

5.1 In order to protect the people – and help them protect themselves – there is a need to assess accurately how greater the risks are. Without some quantitative approach for gauging the importance of specific risks, in terms of the likely magnitude of their impact on populations, government policies might be driven exclusively by factors such as pressure groups or the emotive weight of individual cases. Policies for public awareness need to be initiated in order to ensure that media and educational system play an active role in educating people about various health impacts from polluted environment. Therefore, there is an urgent need to design, promote and implement the best practices to be adopted for all the stakeholders.

5.2 Priority will be to educate citizens about environmental risks, the economic and health dangers of resource degradation and the adverse impacts on environment. Information about the environment will be published periodically. Affected citizens and non-governmental organizations may also play a role in environmental monitoring and therefore allowing them to supplement the regulatory system and recognizing their expertise and commitments and vigilance will also be very effective. Public access to environmental information should be provided.

5.3 Greater emphasis will be placed on promoting environmental health awareness amongst the students in schools and colleges. Professional

and non-governmental bodies will be encouraged to be more active in imparting environmental health training and building awareness. Use of media may also be encouraged for checking reckless use of loudspeakers, dumping in water bodies, and scattering of wastes.

6. IMPLEMENTATION AND CO-ORDINATION MECHANISM FOR PROGRAMMES & ACTIVITIES ENVISAGED IN THE ROAD MAP/ACTION PLAN

6.1 Environment and Human Health Cell (EHHC) will develop mechanism for Inter-Ministerial and Inter-Departmental coordination so as to have periodic interactions with the stakeholders such as line Ministries (e.g Health, Industry, Labour, Urban Affairs, Human Resources Development, Agriculture etc.), regulatory authorities (State Department of Environment/CPCB/SPCBs, State Health Departments), R&D Institutions, major hospitals, etc. including interaction with the international institutions for exchange of information on prevention and control of environmental related health effects. EHHC will coordinate with the CPCB/SPCBs/PCCs and the State Departments of Environment, who may have similar Environment and Human Health cells or earmark personnel, for implementing the programmes on environmental health. An interdisciplinary and inter-ministerial Committee including NGOs may be constituted by the MoEF to have periodic interactions with all the stakeholders.

6.2 Activities and programmes as envisaged in the road map will be implemented out of the funds allocated by the Ministry of Environment and Forests, WHO and other resources made available under the bilateral assistance or by the international funding agencies such as UNDP, UNEP, USAID, DFID, CIDA, SIDA, NORAD, ADB, World Bank etc.

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भारत सरकार, श्रम एवं रोज़गार मंत्रालय
कारखाना सलाह सेवा एवं श्रम संस्थान महानिदेशालय
GOVERNMENT OF INDIA, MINISTRY OF LABOUR & EMPLOYMENT
DIRECTORATE GENERAL FACTORY ADVICE SERVICE & LABOUR INSTITUTES
"व्यावसायिक सुरक्षा एवं स्वास्थ्य भवन", एन.एस. मंकीकर मार्ग, सायन, मुंबई 400022
"VYAAVASIK SURAKSHA AUR SWASTHYA BHAVAN", N.S. MANKIKAR MARG, SION, MUMBAI 400022

No.R-110III(11)/12/2023-HQ-RTI Date: 28.05.2024

To,
Dr. Raja Singh,
C/O Gurmit Singh, E 205/206, GF,
Amar Colony, Lajpat Nagar 4,
New Delhi, Pin- 110024

Subject: RTI Appeal of Dr. Raja Singh under RTI Act 2005.

Sir,

The question wise reply on the information sought by the applicant is given as under:

Point 3:

Please provide the scope of the study with respect to its validity for occupational settings or non-occupational settings

Reply: The scope of the study is not mentioned in the report. The information is also not available in office records. The copy of the report is enclosed for reference.

Point 7:

Please provide the details of the mesothelioma cases investigation with counts of the cases that were studied in this study (Provide on numbers and not subject details)

Reply: The sought details are not available in the report/ office records.

Point 8

Please provide details of the coverage of malignancy with long latency periods from 15-40 years like mesotheliomas that were covered in the study.

Reply: The sought details are not available in the report/ office records.

Point 9

Please provide details of the retired workers that were covered in the study who may have developed long latency malignancies like mesothelioma much after their actual exposure in workplaces.

Reply: The sought details are not available in the report/ office records.

(Sumit Roy)
Director(S) &
First Appellate Authority

दूरभाष/phone : 02224060535 E-mail: fasli@dgfasli.nic.in, Website : www.dgfasli.gov.in

International Labour Organization

Migrated Content

We have recently updated the ILO website and are in the process of rebuilding a number of pages. You might encounter layout issues on pages as we work on them. Thank you for your understanding while we improve your experience.

The ILO position on safety in the use of asbestos

6 September 2010

1. The ILO position on asbestos is governed by the international instruments (relevant Conventions and Recommendations, and International Labour Conference resolutions) adopted by the Organization, as well as ILO codes of practice. These international instruments provide solid legal bases as well as practical guidance for comprehensive preventive measures at the national and enterprise levels in order to protect workers and prevent asbestos-related diseases.

2. The ILO Asbestos Convention, 1986 (No. 162), provides for the measures to be taken for the prevention and control of, and protection of workers against, health hazards due to occupational exposure to asbestos. Key provisions of Convention No. 162 concern:

- replacement of asbestos or of certain types of asbestos or products containing asbestos with other materials or products evaluated as less harmful,
- total or partial prohibition of the use of asbestos or of certain types of asbestos or products containing asbestos in certain work processes,
- measures to prevent or control the release of asbestos dust into the air and to ensure that the exposure limits or other exposure criteria are complied with and also to reduce exposure to as low a level as is reasonably practicable.

3. The Occupational Cancer Convention, 1974 (No. 139), provides for the measures to be taken for the control and prevention of occupational hazards caused by carcinogenic substances and agents. Key provisions of Convention No. 139 concern:

- periodically determining the carcinogenic substances and agents to which occupational exposure shall be prohibited or made subject to authorization or control;
- making every effort to have carcinogenic substances and agents to which workers may be exposed in the course of their work replaced by non-carcinogenic substances or agents or by less harmful substances or agents;
- reducing the number of workers exposed to carcinogenic substances or agents and the duration and degree of such exposure to the minimum.

4. A Resolution concerning asbestos was adopted by the International Labour Conference at its 95th Session in 2006. Noting that all forms of asbestos, including chrysotile, are classified as human carcinogens by the International Agency for Research on Cancer (IARC), and expressing its concern that workers continue to face serious risks from asbestos exposure, particularly in asbestos removal, demolition, building maintenance, ship breaking and waste

handling activities, it calls for:

- the elimination of the future use of asbestos and the identification and proper management of asbestos currently in place as the most effective means to protect workers from asbestos exposure and to prevent future asbestos-related diseases and deaths.

The Resolution also underlined that the ILO Convention on Safety in the Use of Asbestos, No. 162, should not be used to provide a justification for, or endorsement of, the continued use of asbestos.

In light of the instructions of the Governing Body following the Resolution, the Office has been:

- continuing to encourage member States to ratify and give effect to Conventions Nos. 162 and 139;
- promoting the elimination of the future use of all forms of asbestos and asbestos-containing materials;
- promoting the identification and proper management of all forms of asbestos currently in place; and
- encouraging and helping ILO member States to include measures in their national programmes on occupational safety and health to protect workers from exposure to asbestos.

Related content

PETITIONER:
CONSUMER EDUCATION & RESEARCH CENTRE AND OTHERS

Vs.

RESPONDENT:
UNION OF INDIA & OTHERS

DATE OF JUDGMENT27/01/1995

BENCH:
RAMASWAMY, K.
BENCH:
RAMASWAMY, K.
AHMADI A.M. (CJ)
PUNCHHI, M.M.

CITATION:
1995 AIR 922 1995 SCC (3) 42
JT 1995 (1) 636 1995 SCALE (1)354

ACT:

HEADNOTE:

JUDGMENT:
1. Occupational accidents and diseases remain the most appalling human tragedy of modem industry and one of its most serious forms of economic waste. Occupational health hazards and diseases to the workmen employed in asbestos industries are of our concern in this writ
640
petition filed under Article 32 of the Constitution by way of public interest litigation at the behest of the petitioner, an accredited Organisation. At the inception of filing the writ petition in the year 1986, though it highlighted the lacuna in diverse provisions of law applicable to the asbestos industry, due to orders of-this Court passed from time to time, though wide gaps have been bridged by subordinate legislation, yet lot more need to be done. So the petitioner seeks to fill in the yearning gaps and remedial measures for the protection of the health of the workers engaged in mines and asbestos industries with adequate mechanism for and diagnosis and control of the silent killer disease " asbestosis", with amended prayers as under-

(a) Directions to all the industries and the official-respondents to maintain compulsorily and keep preserved health records of each workman for a period of 40 years from the date of beginning of the employment or 10 years after the cessation of the employment, whichever is later;
(b) To direct all the factories to adopt "THE MEMBRANE FILTER TEST";
(c) To direct all industries to compulsorily insure the employees working in their respective industries, excluding those already covered by the Employees State Insurance Act and the Workmen Compensation Act so as to

entitle the workmen to get adequate compensation for occupational hazards or diseases or death;

(d) To direct the authorities to appoint a committee of experts to determine the standard of permissible exposure limit value of 2 fibre/cc and to reduce to 1-fibre/cc for Chrystolite type of asbestos, 0.5-fibre/cc for Amosite type of asbestos and for the time being 0.2-fibre/cc for Crocidolite type of asbestos at par with the international standards;

(e) To direct the appropriate Govenunents to cover the workmen and to extend them Factories Act or by suitable regulatory provisions contained therein to all small scale sectors which arc not covered under the Factories Act;

(f) To direct re-examination of such of those persons who are found suffering from Asbestosis by National Institute of Occupational Health but not the E.S.I. hospitals; and in particular the Inspector of factories, Gujarat, be directed to have re-examined all those workmen, examined by ESI by N.G.D.H. and to award compensation; and

(g) To direct the Central Goverment to appoint a committee to recommend whether dry process can be completely replaced by wet process.

2. It would appear from the record that in Karnataka, Andhra Pradesh and Rajasthan, there exists about thirty mines and the workmen employed therein are about 106 1. There are about 74 asbestos industries in nine States, namely, Haryana, Delhi, Andhra Pradesh, Karnataka, Rajasthan, Maharashtra, Kerala, Gujarat and Madhya Pradesh. It would also appear that as on August 1986 there are about 11,000 workmen employed in those industries. Basing on Biswas Committee report, the petitioner filed the writ petition. The Central Govt. accepting the said report, framed modal Rule 123A of Factories Act and on its model relevant laws and Rules were amended and are now brought into force. We are not referring to the findings and recommendations of Biswas Committee as the "Asbestos Convention, 1986" covered the whole ground.

3. In Convention 162 of the Interna-

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tional Labour Conference (ILC) held in June, 1986, it had adopted on 24th June, 1986 the Convention called "the Asbestos Convention, 1986". India is one of the signatories to the Convention and it played a commendable role suggesting suitable amendments in the preparatory conferences. It has come into force from June 16, 1989, after its ratification by the Member-States. Article 2(a) defines "asbestos" to mean the fibrous form of mineral silicates belonging to rock-forming minerals of the serpentine group, i.e. chrysotile (white asbestos), and of the amphibole group, i.e. actinolite, amosite (brown asbestos, cummingtonite-grunerite),anthophyllite, crocidolite (blue asbestos), tremolite, or any mixture containing one or more of these." "Asbestos dust" is defined as "airborne particles of asbestos or settled particles of asbestos" which may become airborne in the working environment "Respirable asbestos fibre" is defined as a particle of asbestos with a diameter of less than sum and of which the length is at least three times the diameter; "Workers" coverall employed persons; "Workplace"

covers all places where workers need to be or need to go by reason of their work and which are under the direct or indirect control of the employer;

4. Article 5(2) provides that "National laws or regulations shall provide for the necessary measures, including appropriate penalties, to ensure effective enforcement of and compliance with the provisions of the Convention.". Article 8 provides that "employers and workers or their representatives shall co-operate as closely as possible at all levels in the undertaking in the application of the measures prescribed pursuant to this Convention". Article 9 in Part III prescribes Protective and Preventive Measures, regulating that the national laws or regulations shall provide that exposure to asbestos shall be prevented or controlled by one or more of the following measures (a) making work in which exposure to asbestos may occur subject to regulations prescribing adequate engineering controls and work practices, including workplace hygiene; (b) prescribing special rules and procedures including authorisation, for the use of asbestos or of certain types of asbestos or products containing asbestos or for certain work processes. " Article 15 postulates that (1) "the competent authority shall prescribe limits for the exposure of workers to asbestos or other exposure criteria for the evaluation of me working environment (2) the exposure limits or other exposure criteria shall be fixed and periodically reviewed and updated in the light of technological progress and advances in technological and scientific knowledge, (emphasis supplied), (3) in all workplaces where workers are exposed to asbestos, the employer shall take all appropriate measures to prevent or control the release of asbestos dust into the air, to ensure that the exposure limits or other exposure criteria are complied with and also to reduce exposure to as low a level as is reasonably practicable." Clause (4) provides that on its failure to carry out the above direction to the industry to maintain and replace, as necessary, at no cost to the workers, adequate respiratory protective equipment and special protective clothing as appropriate. Respiratory protective equipment should comply with standards set by the competent authority and be used only as a supplementary, temporary, emergency or exceptional measure and not as an alternative to technical control.

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5.Article 16 mandates, that 'each employer shall be made responsible for the establishment and implementation of practical measures for the prevention and control of the exposure of the workers he employs to asbestos and for their protection against the hazards due to asbestos " (emphasis supplied). Article 17 provides demolition of plants or structures containing friable asbestos insulation etc., the details whereof are not necessary. Article 18 obligates the employer to provide clothing to the workers, maintenance, handling and cleaning thereof etc. etc. Article 19 deals with the disposal of the waste containing asbestos. Part IV consisting of Articles 20 and 21, deals with surveillance of the working environment and workers' health. Article 20 (1) provides that "where it is necessary for the protection of the health of workers, the employer shall measure the concentrations of airborne asbestos dust in workplaces, and shall monitor the exposure of workers to asbestos at intervals and using methods specified by the competent authority." Sub-Article (2) of Article 20 envisages maintenance of the records:- "the records of the monitoring of the working environment and of the exposure of workers to asbestos shall be kept for a period prescribed by the

competent authority " (emphasis supplied). Clause (3) "the workers concerned, their representatives and the inspection services shall have access to these records." Clause (4) "the workers or their representatives shall have the right to request the monitoring of the working environment and to appeal to the competent authority concerning the results of the monitoring. ". Article 21(1) envisages That "workers who are or have been exposed to asbestos shall be provided, in accordance with national law and practice, with such medical examinations as are necessary to supervise their health in relation to the occupational hazard, and to diagnose occupational diseases caused by exposure to asbestos ". Clause (2) adumbrates that such monitoring shall be free of the charge of the workers and shall take place as far as possible during the working hours. Clause (3) accords to the workers of the right to information, in that behalf, of the results of their medical examination (emphasis supplied) "shall be informed in an adequate and appropriate manner of the results of their medical examinations and receive individual advice concerning their health in relation to their work. Clause (4) is not material for the purpose of this case, hence omitted. Clause (5) postulates that the competent authority shall develop a system of notification of occupational diseases caused by asbestos.

6.Article 22, in Part V, relating to information and education is not relevant for the purpose of this case, hence omitted. In Part VI-Final Provisions, Article 24 is relevant for the purpose of this case and Clause (1) thereof states that "this Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General". The other Articles 23, 25 to 30 are not relevant.

7.International Labour Office, Geneva, has provided the Rules regarding " safety in the use of asbestos". In Rule 1. 1.2 (Possible health consequences of exposure to asbestos dust), it is stated that there are three main health consequences associated with exposure to airborne asbestos (a) asbestosis: fibrosis (thickening and scarring) of the lung tissue; (b) lung

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cancer: cancer of the bronchial tubes; (c) mesothelioma:cancer of the pleura or peritoneum. In asbestos workers, other consequences of asbestos exposure can be the development of diffuse pleural thickening and circumscribed pleural plaques which may become calcified. These are regarded as no more than evidence of exposure to asbestos dust. Other types of cancer (e.g. of the gastrointestinal tract) have been attributed to asbestos exposure though the evidence at present is inconclusive. In Rule 1.3, definitions of asbestos, asbestos dust, respirable asbestos fibre have been defined thus :-

(a) cubestas is defined as the bibrous form of mineral silicates belonging to the serpentine and amphibole groups of rockforming minerals, including: actinolite, arnosite (brown asbestos, cumming to nite, grunnerite), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos), tremolite, or any mixture containing one or more of these;

(b) asbestos dust is defined as airborne particles of asbestos or settled particles of asbestos which may become airborne in the working environment;

(c) respirable asbestos fibre is defined as

a particle of asbestos with a diameter of less than. 3 um and of which the length is at least three times the diameter;

8.In Chapter 3, Exposure limits have been defined thus :-

3.1.1. - The concentrations of airborne asbestos in the working environment should not exceed the exposure limits ap.proved by the competent authority after consultation with recognised scientific bodies and with the most representative organisations of the employers and workers concerned.

3.1.2. - The aim of such exposure limits should be to eliminate or to reduce, as far as practicable, hazards to the health of workers exposed to airborne asbestos fibres.

3.1.3. - The exposure level of airborne asbestos in the working environment should be established by: (a) by legislation; or (b) by collective agreement or by any other agreements drawn up between employers and workers; or (c) by any other channel approved by the competent authority after consultation with the most representative employers' and workers' organisations.

3.1.4 - it provides periodical review in the fight of technological progress and advances in technical and medical knowledge concerning the health hazards associated with exposure to asbestos dust and particularly in the light of results of workplace monitoring.

9. In Chapter 4, under Monitoring in the workplace, Rule 4.4.4 is relevant for the purpose of this case which adumbrates that the measures of airborne asbestos fibres concentrations in fibres per millilitre in the workplace air should be made by the membrane filter method using phase contrast light microscopy as described in Appendix B of the Rules. All respirable fibres over 5 um in length should be counted by this method. Rule 4.4.5 provides that the measurement of airborne dust concentrations (mg/m3) in the workplace air should be made by gravimetric method as described in Appendix C to the Rules. The mass of the collected total dust should be determined and, by analysis, the of asbestos and its mass percentage.

10.Rule 4.5 Monitoring Strategy and Rule 4.6-Record keeping, have been adumbrated as under:-

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4.6.1. Record should be kept by the employer on aspects of asbestos dust exposure. Such records should be clearly marked by date, work area and plant location etc. etc.

11.In General preventive methods, in Chapter V. Rule 5.2. 1. - All appropriate and practicable measures of engineering, work practice and administrative control should be taken to eliminate or to reduce the exposure of workers to asbestos dust in the working environment to the lowest possible level. Rule 5.2.2. provides that " engineering controls should include mechanical handling, ventilation and redesign of the process to eliminate, contain or collect asbestos dust emissions by such means as (a) process separation, automation or enclosure; (b) bonding asbestos fibres with other materials to prevent dust generation; (c) general ventilation of the working areas with clean air, etc. etc.

12. Chapter VI deals with personal protection of the respiratory equipment etc., the details whereof are not necessary. Chapter VII deals with the cleaning of the

premises of the plant. Detailed instructions as to the manner in which work premises are maintained in a clean state, free of asbestos waste, have been provided and it is not necessary to enumerate all the details. Suffice it to say that every industry shall scrupulously adhere to the instructions contained in Chapter VII and Ix. Chapter X deals with the supervision of the health of workers.

13. Part B deals with control of asbestos exposure in specific activities, mining and milling, asbestos cement, Textiles. In Chapter 15, Encapsulation or removal of friable thermal and acoustic insulation provides the procedure for repairs or removal of asbestos insulations. In Rule 15.10, dry stripping and Rule 15.10.1. provides that dry stripping is associated with very high levels of asbestos dust which should, therefore, be, used only (a) where wet methods cannot be used; (b) where live electrical apparatus might be made dangerous by contact with water; (c) where hot metal is to be stripped and the use of water may be damaging. Rule 15.10.2 provides that where dry stripping is employed, as effective a standard of separation as possible should be preserved between the work site and the adjacent areas to prevent the escape of asbestos dust. Rule 15.10.3 envisages that all workers within the separated area should be provided with, and should use, suitable respiratory equipment and protective clothing. All other guidelines are not necessary, hence omitted. In Rule 15.1 1, wet stripping provides procedure thus:-

> " 15.1 1. 1. Areas in which wet stripping is being carried out should be separated from other work areas.
>
> 15.11.2. All workers within the separated area should use suitable respiratory protective equipment and protective clothing.
>
> 15.11.3 Electrical equipment in the area should be isolated from the entry of water.
>
> 15.11.4. At the end of the work a competent person should ensure that it is safe for the electrical supply to be restored.
>
> 15.11.5. Before removal is started, care should be taken did do: asbestos material is saturated with water. This may be made easier by the addition of a waterwetting agent.
>
> 15.11.6 (1) Where cladding has to be
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>
> removed, it should first, where practicable, be punctured and the asbestos containing material within the cladding should be thoroughly wetted.
>
> (2) The cladding should then be removed carefully within the enclosure and all surfaces should be vacuumed or sprayed with water.
>
> 15.11.7.The water-saturated material should be removed in small sections and placed immediately in labelled containers which should then be sealed.
>
> 15.11.8.Any slurry produced should be contained and not discharged into drains without adequate filtration. etc. etc.

14. Rule 15.12 provides stripping by high-pressure water jets the details whereof are not material but suffice it to emphasise that specialised method should be carried out only by trained personnel and all precautions relevant to the operation should be taken. Special safety precautions, including those given in this section of Code, are required,

since they arc very high-pressure spraying or dangerous, displaying at the proper place in addition to other stripping warning notices. Other guidelines are not relevant for the purpose of this case but suffice to state that every industry should adopt, adhere to and strictly follow the Rules provided for the safety in the use of asbestos.

15. In the "Encyclopaedia of Occupational Health and Safety", Vol-1, published by International Labour Office, Geneva, the latest 4th Edition, 1991, provides definition of asbestos as has been found hereinbefore and therefore, it is not necessary to its reiteration. Its Pathology has been stated at page 188 in Vol-1, which is as follows:-

"The retained fibres in the alveolar region are 3 um or less in diameter but may be up to 200 um long. Animal experiments strongly point to the longer fibres, 5 um and over, as being much more fibrogenic than shorter fibres. A proportion of the longer fibres, especially amphiboles, become coated with an iron Protein complex producing the drumstick appearance of asbestos bodies. All types of asbestos cause similar fibrosis. The fibrosis starts in the respiratory bronchioles with collections of macrophages containing fibres, and others lying free. These deposits organise, collagen replacing the initial reticulin web. Initially only a few respiratory bronchioles are affected, but the fibrosis spreads centrally to the terminal bronchioles and peripherally to the acinus. The areas increase in size and coalesce causing diffuse interstitial fibrosis with shrinkage. The process starts in the bases spreading upwards as the disease progresses; in advanced disease the whole lung structure is distorted and replaced by dense fibrosis, cysts, and some areas of emphysema.

The pleura, both visceral and parietal surfaces, are affected by the fibrosis and to a degree which is much greater than in other types of pneumoconiosis. The visceral surface may be sclerosed up to 1 cm thick. In the parietal pleura thickening starts as a basket-weave pattern of fibroblasts, the sheets of fibrosis lying along the line of the ribs especially in the lower thorax and posteriorly. The edges become rolled and crenated and, after many years, calcified.

The parietal thickening may be extensive and thick with little or no parenchymal fibrosis. The reasons for this are not fully understood but indicate the need to separate, if possible, parietal and visceral pleural thickening in life.

Diagnosis and types :

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Table 1 lists the types of fibrosis in the lung caused by asbestos that can be Partially or well separated clinically. Recent epidemiological research indicates that asbestosis and pleural plaque may have differing actiologies, natural histories, and significance in terms of morbidity and mortality.

Table 1. Types of lung fibrosis caused by asbestos

Parenchynml		
Pleural:		
	Visceral: Acute	Asbestosis
	Chronic	
	Parietal: Hyaline	
	Calcified	Pleuralplaques

16. The Asbestosis has been signified at page 188 which is as follows:

Asbestosis The signs and symptoms of asbestosis are similar

to those caused by other diffuse interstitial fibroses of the lung. Increased breathlessness on exertion is usually the first symptom, sometimes associated with aching or transient sharp pains ;in the chest. A cough is not usually present except in the late stages when distressing paroxysms occur. Increased sputum is not. present unless there is bronchitis, the result of smoking. The onset of symptoms (except following very heavy exposure) is usually slow and the subject may have forgotten having any contact with asbestos. Persistent dull chest pain and haemoptysis indicate the need to investigate further the diagnosis of bronchial or mesothelial cancer.

The most important physical sign is the presence of high-pitched fine crepitations (crackles) at full inspiration and persisting after coughing. They occur initially in the lower axillae and extend more widely later. Agreement between skilled observers on detecting this sign is good but it may vary from day to day in the early stages. It may also be present as an isolated sign in 2-3% of otherwise normal individuals. There are now means of recording this sign on tape. Other sounds wheezes and rhonchi are of no help in diagnosis, but indicate associated bronchitis. Clubbing of the fingers and toes was formerly regarded as an important physical sign. There is an impression that it is now less frequently seen. Its seventy does not relate well to other aspects of the diagnosis. There is poor agreement between observers except when the clubbing is very pronounced. It is possible that its presence relates to the rapidity of progression of the disease.

The chest radiograph remains the most important single piece of evidence, even though the appearances are similar to other types of interstitial fibrosis. When the radiography is classified by three or more skilled readers using the ILO 1971 scheme independently, it is found that virtually all cases of asbestosis are picked up by one or more of the readers as Category 1/0 or above. The radiographic appearances are well illustrated in the set of standard films of the ILO 1980 Classification of the radiographic appearances of the pneumoconioses (see PHEUMOCONIOSES, INTERNATIONAL CLASSIFICATION OF). The classification provides a means of recording the continuum from normality to the most advanced stages on a 12-point scale of severity (profusion) and of extent (zones) affected. The earliest changes usually occur at the bases with the appearance of small irregular (linear) opacities superimposed on the normal branching architecture of the lung. As the disease advances the extent increases and the profusion of irregular opacities progressively obscures the normal structures. Shrinkage of the lung occurs, with elevation of the diaphragm. in advanced cases

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distortion of the lung with cysts (honeycomb lung) and bullae occur. The hilar glands are not enlarged or calcified unless exposure has been to mixtures of silicious dusts. This may occur, for example, in making asbestos roofing shingles or pressure pipes, and in mining. The small opacities may then be rounded rather than irregular.

The pattern of lung function provides the important third component in diagnosis. The functional changes are the result of a shrunken and non-homogeneous lung, without obstruction of the larger airways (restrictive syndrome). The total lung volume is reduced and especially the forced vital capacity (FVC), but the ventilatory capacity (FEV1.0) is only reduced in proportion to the FVC, so the ratio FEV 1.0/ FVC is normal or even raised. The transfer factor for

carbon monoxide is reduced in later stages, but in the early stage an increase of ventilation on a standard exercise test may be the only alteration indicating impairment of gas exchange. Although the restrictive syndrome is the commonest pattern (about 40%) in about 10% of cases airway obstruction is the main feature and in the remainder a mixed pattern is seen. This is though to be largely due to the confounding effects of cigarette smoking.

Visceral pleurisy: chronic and acute This occurs in two forms chronic and acute. The former is the commoner and is a usual accompaniment of parenchymal disease, but its severity does not run parallel with the parenchymal disease. The diagnosis is radiographic. In some cases one or both of the costophrenic angles are filled in but the more specific feature is the appearance of well defined shadow running parallel to the line of the lateral chest wall and separated from it by a narrow (1-2 nun) clear zone. This is due to the thickened pleura seen "edge on". It is illustrated in the ILO 1980 standard set of films. The thickening is best seen in the middle and lower third of the lateral chest wall, the apices are usually spared. It is common in those only lightly exposed to find this pleural thickening as the only radiographic feature. It is readily missed when present only over a short length of the wall and if the radiographic technique does not give a clear picture of the periphery of the lung. When the visceral pleura is greatly thickened it causes veiling of the lung field, obscuring both the normal structure and parenchymal changes. This probably the basis of the "shaggy heart" and the "ground glass" appearance described in the carly accounts of asbestosis. The wide recognition that small areas of pleural thickening may be the only sign of past exposure to asbestos is recent, and it seems to be a feature of the effects of low exposure to the dust. It is likely to remain an important observation for monitoring exposure to improved conditions in the future.

Acute pleurisy affecting the bases, and costophrenic angles, with effusions, sometimes blood-stained, is now a recognised sequel to asbestos dust exposure. It is associated with pain, fever, leucocytosis and a raised blood sedimentation rate. It settles in a few weeks but leaves the costophrenic angles obscured. No precipitating factors have been identified. Its recognition is important. Firstly, the cause may be missed unless and adequate occupational history is taken; secondly not all effusions in asbestos workers signify the onset of an asbestos-related cancer. A few weeks of observation may be necessary to confirm the aetiology.

Summary of diagnosis The diagnosis of asbestosis therefore depends upon

(a)a history of significant exposure to asbestos dust rarely starting less than 10 years before examination:

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(b) radiological features consistent with basel fibrosis (Category 1/0 and over, ILO 1980);

(c) characteristic bilateral crepitations;

(d) lung function changes consistent with at least some features of the restrictive syndrome.

Not all the criteria need to be met in all cases but (a) is essential, (b) should be given greater weight than (c) or (d); however, occasionally (c) may be sole sign, Other investigations are not of much help. Asbestos bodies in the sputum indicate past exposure to asbestos but are not diagnostic of asbestosis. Their absence when there is much sputum and marked radiological changes of fibrosis suggest an alternative cause for the fibrosis.

Immunological tests may be positive but do not help in consistent separation of asbestosis from other types of fibrosis. Lung function results must be assessed in relation to appropriate standards allowing for ethnic, sex and age differences and for cigarette smoking.

Asbestos corns on the fingers area of thickening skin surrounding implanted fibres are now much less common because much of the asbestos fibre is packed mechanically and gloves are worn. Corns do not lead to skin tumors and disappear on removal of the fibres.

17.Pleural plaques and sources of exposure to asbestos have been stated at page 189-191, thus :-

Pleural plaques Parietal pleural plaques alone rarely cause symptoms. They may occur alone or with asbestosis. The diagnosis in life is radiological and the appearance are more specific than in the case of parenchymal fibrosis. PA films will detect most cases, but because they are frequently thickest posteriorly their full extent is best seen using oblique views. The ILO 1980 standard film show their appearance and the scheme provides, for the first time, a separation of parietal (circumscribed) and visceral (diffuse) pleural thickening. The plaques lie along the line of the ribs, and when thick cast a well defined shadow over the lung field extending in from the lateral chest wall, where they may also be seen "edge on".

Separation from visceral thickening depends largely on a defined edge to the shadow. Both types may occur together. Dependent mostly on the length of time since first exposure, and age, patchy Calcification occurs in the edges. This produces a bizarre pattern of dense shadows likened to "gluttering candle wax" or a "holly leaf". The onset of calcification reveals many small plaques not previously visible. When calcification occurs in a crater-shaped plaque on the dome of the diaphragm a diagnosis of past exposure to asbestos or related minerals can be made with confidence.

Sources of exposure to asbestos Formerly it was though easy to establish past exposure to asbestos by inquiry about work in manufacturing plants, or the application of the fibre for insulation. Now it is realised that only the most detailed history of all jobs, residences and occupations of the family will reveal possible exposures to asbestos. The reasons for this change are

(a) the much wider use of asbestos in thousands of products especially since the Second World War (see ASBESTOS):

(b) the recognition that significant exposure to asbestos occurred around mines and manufacturing plants in the past;

(c) the discovery of family exposure to the dust brought home on clothing, and

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also that those working in an area where lagging is in progress may be affected, even though they are engaged in lagging;

(d) the finding that calcified pleural plaques, indistinguishable from those occupationally exposed, also occur in the general population in localised areas in several countries (Finland, Czechoslovakia, Bulgaria, Turkey and others).

With the discovery of such diversity of sources of possible exposure, but virtually no quantitative information about its severity, and few long term follow up studies of those exposed, it is not surprised that there is controversy about the health hazards. However, some conclusions emerge which must be subject to revision in the future.

(1)Asbestosis is primarily occupational in origin, the

result of mining , milling, manufacturing, applying, removing or transporting asbestos fibre. Exposure is much less when the fibre is bound in the product (asbestos cement and asbestos plastic and paper product). Also exposure in the past was much greater than it is today with the use of the best working practices.

(2)Asbestosis may have been caused by home exposure from dusty clothing at a time when there was no dust or hygiene control in the factories.

(3)Asbestosis does not result from the very limited exposure to which the general public is or has been subject, even though asbestos fibers are detectable in the lungs of a high proportion of adults in industrialized areas. The median numbers of fibres so detectable are two to three order of magnitude less than that found in those occupationally exposed.

(4) There are and have been important differences between countries in the use of asbestos,so that exposure for the same occupation varies widely. For example, dry wall fillers (sparkling) contain asbestos in the United States but not the United Kingdom; thus sanding of internal walls during construction and maintenance is a source of exposure in the former but not in the latter. On the other hand,spraying of crocidolite was much more widespread in the 1940s in the United Kingdom that elsewhere.

(5) Pleural plaques can arise at levels of exposure probably much lower that required to produce asbestosis. In addition it is probable that other minerals can cause plaques. For example, among chryosotile miners in Quebec calcified plaques are limited to those who have worked in two out of the eight mines.The minerals causing the plaques in general population have not been fully established. Tremolite, an amphibole often present in deposits of asbestos, may be important.

(6) Whether chrysotile and the amphiboles differ in fibrogenicity in man is uncertain, but some evidence indicates that the amphiboles may be more fibrogenic. In animals there is little difference but the amphiboles remain in the lung much longer than the chrysotile.

The relation of asbestosis to dose of dust In only a few instances are there records of past dust sampling to relate to the prevalence or incidence of asbestosis. But the information has been exhaustively analysed for miners and millers in Quebec, a group of asbestos cement workers in the United States and asbestos textile workers in the United Kingdom, because of its relevance to setting hygiene standards. In North America the dust was measured in millions of particles/ft3, in the United Kingdom in fibres/cm3 the measurement now international used.

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All the data show a clear relation between estimated dose of dust (concentration x time of exposure) and the incidence or severity of disease, but are insufficiently precise to determine whether there is a threshold level below which asbestosis will not occur. A cautious conclusion from the North American studies is that at about 100 million particles/ft3/yr there might be a threshold or that the risk of developing asbestosis would be as low as 1% of men after 40 years' exposure could be as WWI as 1.1 fibres/cm3 or may have to be as low as 0.3 fibres/cm3". More precise information will only become available when the dust sampling introduced widely after the mid-1960s is related to the incidence of disease in the future.

The relation of asbestosis to lung cancer - The important questions here are: firstly, is there an excess risk of

bronchial cancer only in those who also have some degree of asbestosis? Secondly, if the dust exposures are low enough to eliminate asbestosis, will the excess lung cancer risk also be reduced to an acceptably low level? Neither question can be answered at present, and so disagreement is likely. It is known that there is a close association between asbestosis and lung cancer, about 50% of those dying from or with asbestosis have a lung cancer at post mortem. Among those knowledgeable about details of the dose-response data there would probably be agreement that dust exposures low enough to eliminate asbestosis will also reduce the excess bronchial cancer risk to a very low value. This does not extend to the risk to a very low value. This nearly so closely related to that of asbestosis (see ASBESTOS (MESOTHELIMO AND LUNG CANCER).

PREVENTION -

This depends on successful control of dust exposure and medical surveillance to protect the individual, as far as is possible, and for the detection of health trends in be group.

Engineering control - Replacement of asbestos by other material believed to be safer has been widespread since the mid1970s. Man-made mineral fibres and other insulating materials are rapidly replacing asbestos for heat insulation. But for other uses, for example, asbestos cement, friction material and some felts and gaskets, substitution is not at present practicable.

Dust control has been gradually improved by partial or complete enclosure of plants and the wide use of well designed local exhaust ventilation. In the textile section a completely new wet process of forming the thread has greatly reduced dust level, previously difficult to control. During maintenance work on old insulation much stricter control of exposures is possible by isolation of the working areas, and by training in the use of good working practices to reduce the dust, for example damping of the insulation before removal and the use of vacuum cleaning in place of sweeping. But removal of old insulation is likely to remain for many years a major potential source of high exposure (see also DUST CONTROL INDUSTRIAL.

Medical surveillance The insidious onset of asbestosis and the lack of highly specific features indicate the need for well recorded and systematic, initial, and periodic examinations of asbestos workers. This ensures the best chance of detecting the earliest signs. Physical examination of the chest, full-sized, high technical quality chest radiographs and test of FVC and FEV1-0 are the minimum required. The interval will vary from annually up to four times yearly, with more frequent visits when there are clinical reasons. There is increasing evidence that the radiological

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features of asbestosis are in part cigarette-smoking dependent which requires the recording of smoking histories. This and the multiplicative effects of asbestos dust and cigarette smoking on the risk of bronchial cancer provide the strongest possible grounds for stopping cigarette smoking in those potentially exposed to asbestos. Personal advice on the special dangers of smoking and limiting opportunities for smoking at work are essential steps in prevention. Full personal protective equipment will be required where dust levels cannot be lowered to the hygiene standard. The system of periodic examinations also provides, if properly analysed, essential information about the effectiveness or failure of the engineering control of

the dust. Tabulation, by age and years of exposure, of the results of classifying the chest films on the ILO 1980 scheme preferably by independent readers gives early evidence of trends in the prevalence of asbestosis. This valuable information will be missed if the group findings are not examined in detail.

Treatment:-

There is no specific treatment for asbestosis. Where the rate of progression appears unusually rapid further special investigations, including lung biopsy, may be justified if it is likely to assist in the differential diagnosis, and influence treatment for example the use of steroids, but these are not of proved value. The severity of past exposure is the only factor known to influence progression rate. Thus, those with some evidence of asbestosis, if young or middle-aged should be removed from further exposure. In cases where exposure has not been heavy and asbestosis is only detected late in life,, progression may be very slow and the grounds for removal from work with asbestos, under good conditions, are less compelling.The widespread and often misleading publicity given to the hazards of exposure to asbestos may cause much anxiety to those with asbestosis, both for their own health and for that of their family. Reassurance, and the putting of the likely prognosis in true perspective, are an important Part of good treatment. The special risks of continuing cigarette smoking need emphasis. Mesotheliomas are a rare complication in those exposed only to chrysotile.

Compensation: -

The conventions on the awarding of compensation for asbestosis vary in different countries. Unusual breathlessness on exertion, as a cause of disability, may be required, even though it is not essential for a confident diagnosis of asbestosis. Compensation May be limited to those with evidence of parenchymal disease; pleural fibrosis parietal or visceral alone may not be accepted. Lung (bronchial) cancer is usually accepted as part of the disease provided there is at least some evidence of parenchymal fibrosis, but may be rejected if there is no radiological evidence of pleural or parenchymal fibrosis. There is plenty of opportunity for disagreement, especially when a factor for uncertainty of prognosis is included. It is now established did asbestos dust alone may cause lung cancer although the absolute risk is very small comPared with that from the combined effects of cigarette smoking and asbestos dust. It has not been established that pleural plaques alone result in an increased risk of bronchial or mesothelial tumours, above that for similar exposures to asbestos dust without these pleural changes. The considerable uncertainty about the likely rate of Progression of the fibrosis makes assessment on first diagnosis especially difficult. Lung biopsy is not justifiable solely for compensation assessment.

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ASBESTOS (mesothelioma and lung cancer)

While pulmonary fibrosis due to exposure to asbestos (asbestosis) has been known for decades, the first reports of individual cases of asbestosis combined with pulmonary cancer which appeared from time to time in various countries were accepted more as a curiosity. They Id not attract much attention untill in 1947 a British Chief Inspector of Factories, E.R.A. Merewether, reported that lung cancer was found to be the cause of death in 13.2% of persons known to have asbestosis who had died and been autopsied between 1923 and 1946. A similar high proportion of cancer deaths in

asbestosis was found by other pathologists and the probability of a role of asbestos in pulmonary carcinogenesis was definitely established by an epidemiological study by Doll in 1955, and confirmed by further studies.

Soon afterwards a new surprising discovery was made in South Africa. An accumulation of cases of an otherwise very rare tumour of the pleura and peritoneum, the malignant mesothelioma, was reported by Wagner in 1959 and related to exposure to the locally mined type of asbestos, crocidolite. Soon afterwards cases were identified in non-mining occupational exposures to asbestos in England, in the United States and elsewhere. In contrast with asbestosis, and in contrast with asbestos-related pulmonary cancer, mesothelioma was found also in persons whose exposure was not necessarily occupational.

Bronchogenic carcinoma related to asbestos: -

Bronchogenic carcinoma of the lung.There is a disease very in the general population. While in many countries the total mortality from cancer slowely declines, the incidence and mortality from lung cancer increases and stands as the most frequent cause of death from cancer, particularly in cigarette smokers. It begins with transformation of the mucous membrane lining the inside of the bronchus at various level and such foci of transformation may remain at their initial spot for some time shedding at times atypical or metaplastic cells into the sputum without causing other symptoms. This is the period in which we sometimes may succeed in discovering these pre-cancerous, or the earliest cancerous, changes by sputum cytology sooner than by other diagnostic methods. Some of such early alterations of cells is reversible and may spontaneously heal when the cause disappears, e.g. when the person stops smoking. When the original focus develops definite cancer cells, the focus begins to grow, to bleed and slowly to obstruct the way, a growing malignant tumour becomes visible on the radiogram and unless it can be surgically removed as soon as confirmed, it tends to spread through growth and through dissemination by blood and by lymph and to lead eventually to death. Supporting treatment by chemotherapy and radiation successfully prolongs life and radical surgery can provide complete healing.

The various components of the bronchial lining may undergo malignant transformation and consequently the carcinoma may be composed of various cells and have various histological appearances such as adenocar-cinoma or squamous, or oat-cell carcinoma.

There are no histological or other characterstics winch would specify the individual lung cancer as cancer caused by asbestos.

In many cases of asbestos-linked pulmonary cancers the lungs also show pulmonary fibrosis-asbestosis

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microscopically, and often macroscopically, and on x-ray. examination. Some scientists believe that so-called "asbestos lung cancer" can only develop on a pathologically changed terrain of asbestotic fibrosis. There is evidence of such a possibility in human pathology: the scar-carcinoma. Others believe that exposure to. asbestos alone, particularly in a smoker, may provoke cancerous growth without also causing asbestosis. The decision between the two opinions is difficult to reach because in individual clinical cases of bronchogenic carcinoma we cannot distinguish what is an "asbestos cancer", a "ciprette cancer" or lung cancer from yet another cause. Thus, in most coun-

tries bronchogenic carcinoma is considered an occupational disease due to asbestos, e.g. for workmen's compensation, only in the presence of coexisting asbestosis. If pulmonary fibrosis were a prerequisite for development of asbestos-linked lung cancer, it would follow that lowering exposures to asbestos to levels which effectively prevent asbestosis would automatically eliminate "asbestos lung cancer".

Epidemiological data

In man the link of lung cancer with asbestos has been mainly epidemiological. while asbestosis cannot occur without exposure to asbestos mad consequenty every case of asbbestoses must be linked with such exposure, with pulmonary cancer the situation is quite different. It is a rather common disease in the general population. The link with exposure to asbestos is based on finding whether in those exposed to asbestos is based on finding whether in those exposed to asbestos bang cancer occurs more frequently than in those unexposed, i.e. whether in those exposed there is an excess incidence of lung cancers.

Since Doll's study a number of other epidemilogical studies, of various levels of excellence, have been carried out which confirm that indeed there is an excess of bronchogenic carcinoma in persons exposed to asbestos, under certain circumstances, and thus that asbestos must be considered one of a number of carcinogenic substance.

What are the circumstances of a manifest risk of cancer in asbestos exposure? It has been established that smoking cigarettes greatly increases this risk. In fact the large majority of lung cancers attributed to asbestos exposure have occurred in smokers. A lung cancer in an asbestos-exposed non-smoker has been a rarity. Table 1 shows the effect of both exposures together while each of the two exposures also carries a risk by itself. A particular exposure to asbestos in the reported group of workers increased the basis risk of pulmonary cancer in nonsmokers. However, since the risk in nonsmokers was very small, its further increase still meant only very few cases, if any at all. On the other hand, when the basic risk of exposure to asbestos was combined with the 11. 8 time higher risk of a smoker, this combination necessarily produced a serious risk leading to an excess of incidence of pulmonary cancer. This experience has an important practical implication: most "asbestos cancers of the lungs" could be prevented if the workers did not smoke. In fact it was found that the risk for the asbestos workers who had stopped smoking declined after 10 years to the low level existing for non-smokers.

The bronchogenic carcinoma has a long latent period, usually 20 years or more. Consequently, what excesses of incidence of pulmonary carcinoma linked with asbestos have been found to date must be linked with exposures 20 years or more development of the tumour. It is known that exposures in those days

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were generally very high. But we usually do not have any precise measurements. Thus in most existing epidemiological studies it has not been easy, and in some not possible, to establish a relation between the incidence of cancer and a certain quantitative level of exposure, other than that the exposure had been high.

Table 1

	Asbestos exposure		
	Little	Moderate	Heavy
Non-smokers	1.0	2.0	6.9
Moderate smokers	6.3	7.5	12.9

Heavy smokers 11.8 13.3 25.0

From : McDonald,J.C. "Asbestos-related diseases: an epidemiological review" (587-601). Biological effects of mineral fibres. Wagner, J.C. (ed). IARC scientific publications No.30 (Lyons, International Agency for Research on Cancer, 1980) Vol.2.

One quantitative measure commonly used is the duration of exposure in years. In other studies the period since first exposure and the duration of exposure. Only a few investigations love had the additional benefit of actually measured data on past levels of exposure. An example of the latter is the series of epidemiological studies of workers of the chrysotile mines of quebec carried out by J.C. McDonald and his collaborators. This and some other studies showed a dose-response relationship, i.e. the higher was the dose, in terms of level of exposure, or of periods of exposure, or of both of them combined, the higher was the excess incidence of bronchogenic cancer. In fact the excess incidence of lung cancer and statistically significantly increased relative risk was usually found only in groups of persons most severely exposed (see Table 2)

Table 2. Relative risks of lung cancer in relation to accumulated dust or fibre exposure, before and after correction of work histories with controls matched for smoking

	Accumulated dust exposure (millions of particles per cubic foot x years)				
	<30	30 <300	300 <1000	>1000	All
Before correction					
Cases	89	73	56	27	245
Controls	108	87	42	8	245
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Relative risk	1	1.02	1.62	4.10	-
After correction					
Cases	85	73	59	27	244
Controls	101	89	44	10	244
Relative risk	1	0.97	1.59	3.21	-

	Accumulated fibre exposure (fibres per ml x years)				
	<100 <1000	100 <3000	1000 >	3000	All
After correction					
Cases	86	76	56	26	244
Control	110	87	35	12	244
Relative risk	1	1.12	2.05	2.77	-

From: McDonald J.C.: Gibbs, G.W., Liddell, F.D.K. "Chrysotile fibre concentration and lung cancer mortality: a preliminary report" (811-817). Biological effects of mineral fibres. Wagner, J.C. (ed). LARC scientific publication No.30 (Lyons, International Agency for Research on Cancer, 1980), Vol.2.

18.In Asbestos Medical and Legal Aspects by Barry 1. Castleman at p. 10 had stated that Dr. Merewether following the diagnosis by Homburter in his co-incidence of Primary Carcinoma at EC Lungs and Pulmonary Asbestos 1943 stated that fibrosis of the lungs as it occurs among asbestos

workers as the slow growth of fibrous tissue (scar tissue) between the air cells of the lungs wherever the inhaled dust comes to rest. While new fibrous tissue is being laid down like a spider's web, that deposited earlier gradually contracts. This fibrous tissue is not only useless as a substitute for the air cells, but with continued inhalation of the causative dust, by its invasion of new territory and consolidation of that already occupied it gradually, and literally strangles the essential tissues of the lungs. In Malignant Mesothelioma in Norway by Gunnar Mowe, 1986 Ed., he stated at p.8 on Aetiology of malignant mesothelioma that in 1943, Dr. Wedler reviewed malignancies in 30 asbestosis cases in Germany, and suggested a casual association between asbestosis and both bronchial and malignant mesothelioma. At p.9, he stated that in 1969, Wagner and Berry reported that
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all the main types of asbestos fibres were capable of producing mesotheliomas in rats after intrapleural or intraperitoneal installation. In the same page in para 2.2, he stated that the importance of asbestos fibre size in explaining the biological effects of asbestos was first emphasized by Timbrell in 1965. At p. 14 in para 3.2, caption lung fibre burden, he stated that lung fibre burden, which is defined as the total content of mineral fibres in the lungs, depends on external asbestos exposure. At pA 5 in Table 5, Biological effects of natural mineral fibres (asbestos related diseases), he stated that long latency time from first exposure until onset of disease is a typical feature of all the asbestos related diseases. At p. 16 in para 3.4, he stated that among 948 patients with malignant mesothelioma, 65% were pleural, 24% peritoneal and 11% pericardial. At p.21, lung fibre analysis under the caption material and methods, para 3, he stated that the lung tissue samples- for fibre analysis were obtained from twelve, pathology departments the analysis samples from 85 men and 13 women disclosed the malignant mesothelioma. At p.25, summary of his results in Paper V, he stated that the median latency time from the first year of exposure until death was 35 years (range-18-53), and the median time interval from last year of exposure until death was 14 years (range: upto 40 years). At p.32, he stated that the estimated proportion of-men with at least possible occupational asbestos exposure were 82%. At p.40, he stated that strict regulations and effective control of such work are vital in order to prevent asbestos related cancers in the future. At p. 41 in para 4, he stated that high amphibole concentration in lung tissue increases the risk of malignant mesothelioma considerably. Asbestos exposure corresponding to only one million fibres per g. of dried lung tissue is also associated with increased risk. In Blannie S. Wilson v. Johns Manville Sales Corpn Ltd., 684 Federal 2nd III (1982), the United States Court of Appeal, District of Columbia Circuit, Ginsburg, J., as a Judge in the Court of Appeal deciding the question of limitation of 3 years from the date of diagnosis of mild asbestos held that the period of 3 years should be computed from the date of discovery and that asbestos, which is not a cancerous process, has a latent period of 10 to 25 years between initial exposure and apparent effect. Even longer periods of time may pass before mesotheliorna manifests itself In William T. Urie v. Guy A. Thompson, 93 L. Ed. = 337 US 163, the Supreme Court of the United States of America laid that the limitation of three years prescribed by the statute of limitation starts from the time when the employee discoveres the disease and

the cause of action accrues only when diagnosis of the disease is accomplished, and not when the employee unwittingly, contracts it nor is each inhalation of silica dust a separate torn giving rise to a fresh cause of action.

19.It would thus be clew that disease occurs wherever the exposure to the toxic or carcinogenic agent occurs, regardless of the country the type of industry, job title, job assignment, or location of exposure. The disease will follow the trail of the exposure, and extend the chain of carcinogenic risk beyond the workplace. It is the exposure and the nature of that exposure to asbestos that determines the risk and the diseases which subsequently result. The development of the carcinogenic risk due to asbestos or any other carcinogenic agent, does not require a continu-

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ous exposure. The cancer risk does not cease when the exposure to the carcinogenic agent ceases, but rather the individual carries the increased risk for the remaining years of life. The exposure to asbestos and the resultant long tragic chain of adverse medical, legal and societal consequences, reminds the legal and social responsibility of the employer or the producer not to endanger the workmen or the community of the society. He or it is not absolved of the inherent responsibility to the exposed workmen or the society at large. They have the responsibility legal, moral and social to provide protective measures to the workmen and to the public or all those who are exposed to the harmful consequences of their products. Mere adoption of regulations for the enforcement has no real meaning and efficacy without die professional, industrial and governmental resources and legal and moral determination to implement such regulations.

20. The preamble and Article 38 of the Constitution of India the supreme law, envisions social justice as its arch to ensure life to be meaningful and liveable with human dignity. Jurisprudence is the eye of law giving an insight into the environment of which it is the expression. It relates the law to the spirit of the time and makes it richer. Law is the ultimate aim of every civilised society as a key system in a given era, to meet the needs and demands of its time. Justice, according to law, comprehends social urge and commitment. The Constitution commands justice, liberty, equality and fraternity as supreme values to usher in the egalitarian social, economic and political democracy. Social justice, equality and dignity of person are corner stones of social democracy. The concept 'social justice' which the Constitution of India engrafted, consists of diverse principles essential for the orderly growth and development of personality of every citizen. "Social justice" is thus an integral part of "justice" in generic sense. Justice is the genus, of which social justice is one of its species. Social justice is a dynamic device to mitigate the sufferings of the poor, weak, Dalits, Tribals and deprived sections of the society and to elevate them to the level of equality to live a life with dignity of person. Social justice is not a simple or single idea of a society but is an essential part of complex of social change to relieve the poor etc. from handicaps, penury to ward off distress, and to make their life liveable, for greater good of the society at large. In other words, the aim of social justice is to attain substantial degree of social, economic and political equality, which is the legitimate expectations. Social security, just and humane conditions of work and leisure to workman are part of his meaningful right to life and to achieve self-expression of his

personality and to enjoy the life with dignity, the State should provide facilities and opportunities to them to reach at least minimum standard of health, economic security and civilised living while sharing according to the capacity, social and cultural heritage.

21. In a developing society like. ours steeped with unbridgeable and ever widening gaps of inequality in status and of opportunity, law is calalist. rubican to the poor etc. to reach the ladder of social justice, Justice K. Subba Rao, the former Chief Justice of this Court, in his "Social Justice and Law' at page 2, had stated that "Social Justice is one of the disciplines of justice and the discipline of justice relates to the society." What is due

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cannot be ascertained by absolute standard which keeps changing depending upon the time, place and circumstance. The constitutional concern of social justice as an elastic continuous process is to accord justice to all sections of the society by providing facilities and opportunities to remove handicaps and disabilities with which the poor etc. are languishing to secure dignity of their person. The Constitution, therefore, Mandates the State to accord justice to all members of the society in all facets of human activity. The concept of social justice embeds equality to flavour and enliven practical content of 'life'. Social justice and equality are complementary to each other so that both should maintain their vitality. Rule of law, therefore, is a potent instrument of social justice to bring about equality in results.

22. Article 1 of the Universal Declaration of Human Rights asserts human sensitivity and moral responsibility of every State that "all human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood." The Charter of the United Nations thus reinforces the faith in fundamental human rights and in the dignity and worth of the human person envisaged in the directive principles of State policy as part of the constitution. The jurisprudence of personhood or philosopy of the right to life envisaged under Article 21, enlarges its sweep to encompass human personality in its full blossom with invigorated health which is a wealth to the workman to can his livelihood to sustain the dignity of person and to live a life with dignity and equality.

23. Article 38(1) lays down the foundation for human rights and enjoins the State to promote the welfare of the people by securing and protecting, as effectively as it may, a social order in which justice, social, economic and political, shall inform all the institutions of the national life. Art.46 directs the State to protect the poor from social injustice and all forms of exploitation. Article 39(e) charges that the policy of the State shall be to secure "the health and strength of the workers". Article 42 mandates that the States shall make provision, statutory or executive "to secure just and humane conditions of work". Article 43 directs that the State shall "endeavour to secure to all workers, by suitable legislation or economic organisation or any other way to ensure decent standard of life and full enjoyment of leisure and social and cultural opportunities to the workers". Article 48-A enjoins the State to protect and improve the environment. As human resources are valuable national assets for peace, industrial or material production, national wealth, progress, social stability, descent standard of life of worker is an input. Art. 25(2) of the universal declaration of human rights

ensures right to standard of adequate living for health and well-being of the individual including medical care, sickness and disability, Article 2(b) of the International Convention on Political, Social and Cultural Rights protects the right of worker to enjoy just and favourable conditions of work ensuring safe and healthy working conditions.

24. The expression 'life' assured in Art.21 of the Constitution does not connote mere animal existence or continued drudgery through life. It has a much wider meaning which includes right to livelihood, better standard of life, hygienic conditions

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in work place and leisure. In Olga Tellis v. Bombay Municipal Corporation, 1985(3) SCC 545, this Court held that no person can live without the means of living i.e. means of livelihood. If the right to livelihood is not treated as a part of the constitutional right to life, the easiest way of depriving a person of his right to life would be to deprive him of his means of livelihood to the point of abrogation. Such deprivation would not only denude the life of its effective content of meaningfulness but it would make life impossible to live, leave aside what makes life liveable. The right to life with human dignity encompasses within its fold, some of the finer facets of human civilisation which makes life worth living. The expanded connotation of life would mean the tradition and cultural heritage of the persons concerned. In State of H.P. v. Umed Ram Sharma, (1986)2 SCC 68, this Court held that the right to life includes the quality of life as understood in its richness and fullness by the ambit of the constitution. Access to road was held to be an access to life itself in that state.

25.In Sunil Batra v. Delhi Administration, (1978) 4 SCC 494, considering the effect of solitary confinement of a prisoner sentenced to death and the meaning of the word 'life' enshrined under Article 21, the Constitution Bench held that the quality of-life covered by Article 21 is something more than the dynamic meaning attached to life and liberty. The same view was reiterated in Board of Trustees of the port of Bombay v. D.R. Nadkarni, (1983) 1 SCC 124, Vikrant Deo Singh Tomar v. State of Bihar, (1988) Suppl.SCC 734, R. Autyanuprasi v. Union of India, (1989)1 Suppl. SCC 251. In Charles Sobraj v. Supdt. Central Jail, Tihar, AIR 1978 SC 1514, this Court held that the right to life includes right to human dignity. The right against torture, cruel or unusual punishment or degraded treatment was held to violate the right to life. In Bandhua Mukti Morcha v. Union of India, (1984) 3 SCC 161 at 183-84, this Court held that the right to live with human dignity, enshrined in Article 21, derives its life-breath from the directive principles of the State policy and particularly Clauses (e) and (f) of Article 39 and Articles 41 and 42. In C.E.S.C. Ltd. & Ors. v. Subhash Chandra Bose, 1992(1) SCC 441, considered the gamut of operational efficacy of Human Rights and the constitutional rights, the right to medical aid and health and held that the right to social justice are fundamental rights. Right to free legal aid to the poor and indigent worker was held to be a fundamental right in Khatri (11) v. State of Bihar, (1981)1 SCC 627. Right to education was held to be a fundmental right vide Maharashtra State B.O.S. & H.S. Education v. K.S. Gandhi, 1991(2) SCC 716. and Unni Krishnan v. State of A.P., (1993)1 SCC 645.

26. The right to health to a worker is an integral facet of meaningful right to life to have not only a meaningful existence but also robust health and vigour without which worker would lead life of misery. Lack of health denudes

his livelihood. Compelling economic necessity to work in an industry exposed to health hazards due to indigence to bread-winning to himself and his dependents, should not be at the cost of the health and vigour of the workman. Facilities and opportunities, as enjoined in Article 38, should be provided to protect the health of the workman. Provision for medical test and treatment invigorates the health of the worker for
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higher production or efficient service. Continued treatment, while in service or after retirement is a moral, legal and constitutional concomitant duty of the employer and the State. Therefore, it must be held that the right to health and medical care is a fundamental right under Article 21 read with Articles 39(c), 41 and 43 of the Constitution and make the life of the workman meaningful and purposeful with dignity of person. Right to life includes protection of the health and strength of the worker is a minimum requirement to enable a person to live with human dignity. The State, be it Union or State government or an industry, public or private, is enjoined to take all such action which will promote health, strength and vigour of the workman during the period of employment and leisure and health even after retirement as basic essentials to live the life with health and happiness. The health and strength of the worker is an integral facet of right to life. Denial thereof denudes the workman the finer facets of life violating Art.21. The right to human dignity, development of personality, social protection, right to rest and leisure are fundamental human rights to a workman assured by the Charter of Human Rights, in the Preamble and Arts.38 and 39 of the Constitution. Facilities for medical care and health against sickness ensures stable manpower for economic development and would generate devotion to duty and dedication to give the workers' best physically as well as mentally in production of goods or services. Health of the worker enables him to enjoy the fruit of his labour, keeping him physically fit and mentally alert for leading a successful life, economically, socially and culturally. Medical facilities to protect the health of the workers are, therefore, the fundamental and human rights to the workmen.
27. Therefore, we hold that right to health, medical aid to protect the health and vigour to a worker while in service or post retirement is a fundamental right under Article 21, read with Articles 39(e), 41, 43, 48A and all related Articles and fundamental human rights to make the life of the workman meaningful and purposeful with dignity of person.
28. In M. C. Mehta v. Union of India, (1987) 4 SCC 463, when tanneries were discharging effluents into the river Ganges, this Court, in a public interest litigation, while directing to implement Water (Prevention and Control of Pollution) Act or Environment (Protection) Act, prevented the tanneries etc. by appropriate directions from discharging effluents into the river Ganga, directed establishment of primary treatment plants etc. and such of these industries that did not comply with the directions were ordered to be closed. when ecological balance was getting upset by destroying forest due to working the mines, this Court directed closer of the mines. In Pt Parmanand Katara v. Union of India, (1989)4 SCC 286, Ohs court directed even private doctors or hospitals to extend services to protect the life of the patient, be an innocent or a criminal liable for punishment in accordance with law. In National Textile Workers' Union v. P.R. Ramakrishnan,

1983(1) SCR 922, the Constitution Bench, per majority, held that the role of a company in modem economy and their increasing impact of individuals and groups through the ramifications of their activities, began to be increasingly recognised. The socio-economic objectives set out in Part IV of the constitution guide and shape the new corporate phi-
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losophy. "Today social scientists and thinkers regard a company as a living vital and dynamic social organism with firm and deep rooted affiliations with the rest of the community in which it functions. It would be wrong to look upon it as something belonging to the shareholders." It was further held that "it is not only the shareholders who have supplied capital who are interested in the enterprise which is being run by a company but the workers who supply labour are also equally, if not, more interested because what is produced by the enterprise is the result of labour as well as capital. In fact, the owners of capital bear only limited financial risk and otherwise contribute nothing to production while labour contributes a major share of the product. While the former invest only a part of their moneys, the latter invest their sweat and toil, in fact their life itself. The workers, therefore, have a special place in a socialist pattern of society. They are not mere vendors of toil, they are not a marketable commodity to be purchased by the owners of capital. They are producers of wealth as much as capital nay very much more. They supply labour without which capital would be impotent and they, at the least, equal partners with capital in the enterprise. Our constitution has shown profound concern for the workers and given them a pride of place in the new socioeconomic order envisaged in the Preamble and the Directive Principles of State Policy. The Preamble contains the profound declaration pregnant with meaning and hope for millions of peasants and workers that India shall be a socialist democratic republic where social and economic justice will inform all the institutions of national life and there will be equality of status and opportunity for all and every endeavour shall be made to promote fraternity ensuring the dignity of the individual. " In that case, the question was whether the labour is entitled to be heard before a company is closed and liquidator is appointed. In considering that question vis-a-vis Article 43-A of the constitution, this Court, per majority, held that they are entitled to be heard before appointing a liquidator in a winding up proceedings of the company.

29. In Workmen of Meenakshi Mills Lid v. Meenakshi Mills Ltd. (1992) 3 SC(: 3 36, a Bench of three Judges considered the vires of Section 25-N of the Industrial Disputes Act on the anvil of Article 19(1)(f) of the Constituion. It was held that the right of the Management under Article 19(1)(f) is subject to the mandates contained in Articles 38, 39-A, 41 and 43. Accordingly, the fundamental right, under Article 19(1)(g) was held to be subject to the directive principles and s.25-N does not suffer from the vice of unconstitutionality.

30. It would thus be clear that in an appropriate case, the Court would give appropriate directions to the employer, be it the State or its undertaking or-private employer to make the right to life meaningful; to prevent pollution of work place; protection of the environment; protection of the health of the workman or to preserve free and unpolluted water for the safety and health of the people. The authorities or even private persons or industry are bound by

the directions issued by this Court under Article 32 and Article 142 of the Constitution.

31. Yet another contentions of the petitioners is that the workman affected by asbestosis are suffering from lung cancer

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and related ailments and they were not properly diagnosed. They be sent to national institute and such of those found suffering from diseases developed due to asbestos, proper compensation paid. It is needless to reiterate that they need to be re-examined and cause for the disease and the nature of the disease diagnosed. Thereon each one of them whether entitled to damages? The employer is vicariously liable to pay damages is unquestionable. The award of compensation in proceedings under Article 32 or 226 is a remedy available in public law. In Rudul Sah v. State of Bihar, 1983(3) SCR 508, it was held that this Court under Article 32 can grant compensation for the deprivation of personal liberty, though ordinary process of court, may be available to enforce the right and money claim could be granted by this Court. Accordingly compensation was awarded. This view was reiterated in Nilabati Behera v. State of Orissa, (1993) 2 SCC 746 and awarded monetary compensation for custodial death lifting the State immunity from the purview of public law. It is, therefore, settled law that in public law claim for compensation is a remedy available under Article 32 or 226 for the enforcement and protection of fundamental and human rights. The defence of sovereign immunity is inapplicable and alien to the concept of guarantee of fundamental rights. Them is no question of de fence being available for constitutional remedy. It is a practical and inexpensive mode of redress available for the contravention made by the State, its servants, it instrumentalities, a company or a person in the purported exercise of their powers and enforcement of the rights claimed either under the statutes or licence issued under the statute or for the enforcement of any right or duty under the constitution or the law.

32. The Government of India issued model Rule 123-A under the Factories Act for adoption. Under the directions issued by this Court from time to time, all the State governments have by now amended their respective rules and adopted the same as part of it but still there are yearning gaps in their effective implementation in that behalf. It is, therefore, necessary to issue appropriate directions. In the light of the rules "All Safety in the Use of Asbestos" issued by the I.L.O., the same shall be binding on all the industries. As a fact, the 13th respondent-Ferodo Ltd admitted in its written submissions that all the major industries in India have formed an association called the "Asbestos Information Centre" (AIC) affiliated to the Asbestos International Association(AIA), London. The AIA has been publishing a code of conduct for its members in accordance with the international practice and all the members of AIC have been following the same. In view of that admission, they are bound by the directions issued by the ILO referred to in the body of the judgment. In that view, it is not necessary to issue any direction to Union or State Governments to constitute a committee to convert the dry process of manufacturing into wet process but they are bound by the rules not only specifically referred to in the judgment but all the rules in that behalf in the above I.L.O. rules. The Employees State Insurance Act and the Workmen's Compensation Act provide for payment of mandatory compensation for the injury or death caused to the workman

while in employment. Since the Act does not provide for payment of compensation after cessation of employment, it becomes necessary to protect such persons from the respective dates of cessation of their employment till date. Liquidated damages by way of compensation are accepted principles of
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compensation. In the light of the law above laid down and also on the doctrine of tortuous liability, the respective factories or companies shall be bound to compensate the workmen for the health hazards which is the cause for the disease with which the workmen are suffering from or had suffered pending the writ petitions. Therefore, the factory or establishment shall be responsible to pay liquidated damages to the concerned workmen.

33. The writ petition is, therefore, allowed. All the industries are directed (1) To maintain and keep maintaining the health record of every worker up to a minimum period of 40 years from the beginning of the employment or 15 years after retirement or cessation of the employment whichever is later; (2) The Membrane Filter test, to detect asbestos fibre should be adopted by all the factories or establishments at par with the Metalliferrous Mines Regulations, 1961; and Vienna Convention and Rules issued thereunder; (3) All the factories whether covered by the Employees State Insurance Act or Workmen's Compensation Act or otherwise are directed to compulsorily insure health coverage to every worker; (4) The Union and the State Governments are directed to review the standards of permissible exposure limit value of fibre/cc in tune with the international standards reducing the permissible content as prayed in the writ petition referred to at the beginning. The review shall be continued after every 10 yews and also as an when the I.L.O. gives directions in this behalf consistent with its recommendations or any Conventions; (5) The Union and all the State Governments are directed to consider inclusion of such of those small scale factory or factories or industries to protect health hazards of the worker engaged in the manufacture of asbestos or its ancillary produce; (6) The appropriate Inspector of Factories in particular of the State of Gujarat, is directed to send all the workers, examined by the concerned ESI hospital, for re-examination by the National Institute of Occupational Health to detect whether all or any of them are suffering from asbestosis. In case of the positive Ending that all or any of them ant suffering from the occupational health hazards, each such worker shall be entitled to compensation in a sum of rupees one lakh payable by the concerned factory or industry or establishment within a period of three months from the date of certification by the National Institute of Occupational Health.

34. The writ petitions are accordingly allowed. No costs.
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BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH AT NEW DELHI

IN O.A. 298 OF 2023

IN THE MATTER OF:
Dr. Raja Singh

.....Applicant

Vs.

Union of India, Through the Secretary, Ministry of Environment, Forests and Climate Change and Ors.

.....Respondents

AFFIDAVIT

I, Dr. Raja Singh, S/o Sh. Gurmit Singh, aged 32 years, R/o E 205/206, GF, Amar Colony, Lajpat Nagar 4, New Delhi 110024, do hereby solemnly affirm and state as follows:

1. That I am the Applicant in the above document and as such fully conversant with the facts of the present case and hence competent to swear the present affidavit.
2. That I have gone through the contents of the accompanying document and has been drafted by me.
3. That I have understood the meaning thereof and the content of the accompanying document is true and correct to the best of my knowledge.

I Identify the Executant Deponent who has Signed in my Presence

DEPONENT

Verification

Verified at New Delhi on this 23 JUL 2024 day of July 2024 that the contents of the above affidavit are true and correct to the best of my knowledge. No part of it is false and nothing material has been concealed therefrom

NOTARY M M SHARMA Advocate Area Delhi Regd. No. 1601/2020 GOVT. OF INDIA

NOTARY M M SHARMA Advocate Area Delhi GOVT. OF INDIA

DEPONENT

ATTESTED

Notary Public, Delhi
23 JUL 2024

Service of Annexures to be placed on record in OA 298/2023

From Dr. Raja Singh <dr.rajasingh@proton.me>

To danubeconsulting@gmail.com, Ankit Virmani<ankit@virmani.in>, Hrithik Sharma<hrithik@virmani.in>, office@virmani.in

CC dheeraj.adv001@gmail.com, Gigicgeorge.adv42@yahoo.in<gigicgeorge.adv42@yahoo.in>, secy.sel@nic.in, mbalodhi.cpcb@nic.in, bhaskar.chhikara@gmail.com

Date Tuesday, 23 July 2024 at 10:51 AM

Revised: Kindly consider this mail.

BEFORE THE NATIONAL GREEN TRIBUNAL
Principal Bench at New Delhi

OA 298 of 2023
Dr Raja Singh vs Union of India & Ors

Most Respectfully,

Please find attached the copy of the annexures that will be filed Before the Hon'ble National Green Tribunal for placing the same on record.

Kindly confirm the receipt of the same.

Thanks and regards
Dr Raja Singh

10.32 MB 1 file attached

annexures_oa298-2023.pdf 10.32 MB