

Air Pollution and Its Impact On Health of General Public Especially of Children

Survey/ Study Conducted By:
Save The Environment Foundation (SEF)
(June 5th, 1998 on the occasion of the World Environment Day)



SAVE THE ENVIRONMENT FOUNDATION

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FORWARD

As the population of the Kathmandu Valley has dramatically increased, the quality of the environment is drastically deteriorating. Air pollution has been emerging as a major environmental problem in Kathmandu valley. Air pollution levels in core zone of Kathmandu is exceeding the WHO standards. Deteriorating air quality of Kathmandu is adversely affecting the health of Kathmandu. As there is no data available in the hospital & clinics to check the severity of air pollution & it's health impact.

Main purpose of this program entitled "Let us Breathe", a survey studies on "Air Pollution & it's impact on health on general public is to highlight the deteriorating air quality in the Kathmandu valley.

A database in the health impact of the general public due to the constant exposure to air pollution is also being collected. In this regard doctors, hospitals & clinics have been interviewed. To collect more information SEF has interviewed general public also.

Through interviews it is known that severity of health impact due to air pollution on general public; especially on children is note worthy. Hence the strong action plan on air pollution control by concerned authorities, together with awareness campaign are highly needed.

The use of Standards prescribed for controlling the vehicle emission should be strictly followed.

It is not only the responsibilities of government but general public should also realize & contribute to control the air pollution in the valley & "LET US BREATHE" fresh air.

Chanda Rana
Executive Chairperson
Save the Environment Foundation (SEF)
Gairidhara, Kathmadu

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“Air Pollution and its impact on health of general public especially of children”

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June 5th, 1998
(World Environment Day)

INTRODUCTION

To analyze the effects of air pollution on human health, SEF conducted survey on the experience of medical doctors working in the field of respiratory disease in Kathmandu. Several health records were obtained and analyzed to bring about a general picture on the existing situation in Kathmandu.

BACKGROUND INFORMATION ON THE POLLUTION PROBLEM OF KATHMANDU VALLEY

Kathmandu Valley’s population grew by 26 percent from 1970 to 1980, and another 44 percent between 1980 and 1990. In 1992, the population stood at approximately 1,060,000 of which 56 percent was urban. The growth in population has been accompanied by a doubling in the number of vehicles in the past decade. The Himal Cement Plant is one of the major industrial sources of pollution.

With the growth in the number of vehicles and industrial expansion, the consumption of coal and automotive fuel has increased. Over the period 1980-93, the increase has been about 150 percent for gasoline, 175 percent for motor diesel, 250 percent for kerosene and 580 percent for fuel oil. The per capital fuel consumption in 1993 was about 27 liters of gasoline, 150 liters of motor diesel, 125 liters of kerosene and 20 liters of fuel oil.

For practical and methodological reasons only a partial assessment and valuation of the health impact due to PM 10 was possible (Table ES.1) In monetary terms the total impact is about NRs. 2,00,000 million. Impact of lead pollution due to the use of gasoline which contains lead is not included.

MEDICAL DOCTORS CONTACTED FOR SURVEY

Dr. Sunil Pradhan

Associate Professor
Department of Radiology
T.U. Teaching Hospital

Dr. Dirgha Singh Bam

MD, D.P.P., DB
Senior chest Physician,
Bronchologist,
Epidemiologist, Allergist

Dr. Basanta Pantha

Bir Hospital

Dr. Nanda Lal Sikarmi

Kanti Children Hospital

Dr. Madhusudan Pun

Kanti Children Hospital

Dr. Faruq Mikrani

Kanti Children Hospital

Dr. Seoma Verma

Kanti Children Hospital

Dr. Anupama Thapa

Kanti Children Hospital

Dr. Dhana Raj Aryal

Kanti Children Hospital

Dr. Ramesh Malla

Pediatrician
Shiddhartha Pathology Clinic

Dr. N.G. Amatya

General Physician/Senior Consultant Chest Physician
Swarwanga Clinic

INTERVIEWS TAKEN

Interviews taken by:

Chanda Rana, Executive Chairperson, SEF

Issues discussed:

Deteriorating air quality of Kathmandu

It's Impact on health

Highest rate of corpulmonale

Chronic bronchitis

Asthma

Allergy cases seen in the hospital

Skin diseases

Patients working in carpet & garment factories, etc.

OPINION BY DOCTORS

Dr. Sunil Pradhan

Suggestion: Air quality must be improved in time

Dr. Dirgha Singh Bam

Population growth is a problem.

Air pollution in Kathmandu is alarmingly high. Rapid Urbanization, bad maintenance of the roads, Vehicle Emission, Industrial pollution are the main pollutants.

Status of the T.B. in Nepal: One hundred thousand T.B. patients are recorded or registered.

Eighty percent of the T.B. patients are from Kathmandu, Patan & Bhaktapur. Twenty percent are from rural areas. Four percent more T.B. patients are found from city areas where houses are congested and have traditional courtyards where they pile garbage's.

Source: Sputum from T.B. patients

Because of the heavy pollution & dust pollution, Germs of T.B> circulate in the air. Cases of T.B. patients are found high in carpet, garment and other industries where working environment lack ventilation and sanitation.

Silicosis cases are found high in carpet & cement industries. There's no cure for such diseases.

Dust pollution causes high rate of cough, throat infections. Dust particles are the carries of T.B. germs through sputum of T.B. patients.

Vehicle Emission aggravates the lungs & throat infections, & causes asthma & allergies.

T.B. Hospital has conducted DOTS program under which there's special provision for treatment of T.B. in 75 districts by opening different health posts.

Eighty-five percent of the disease is controlled. According to doctor, in 1994 cure rate was thirty percent but in 1998 cure rate is eighty-five percent because of the implementation of the DOTS program with direct supervision of health supervisors.

Suggestion:

Air pollution must be controlled, at the same time Government should check rapid & uncontrolled urbanization, population growth & frequent migration.

Bir Hospital Data

Dr. Basanta Pantha

Dr. Basanta Pantha of Bir Hospital provided SEF, data of top ten diseases recorded in the hospital.

2053 – 2054

Interviews with Pediatricians Working in Kanti Children Hospital

Dr. Nanda Lal Sikarmai

Air pollution in Kathmandu is surprisingly high. Since there's n scientific data & parameters to check recorded diseases in hospital, doctors just expressed their general opinions.

Respiratory diseases in children have increased upto twenty-five percent. Chronic pneumonia, bronchitis, throat infections rate are very high.

Causes: Vehicle emission & roadside dust pollution.

Pollutants: Reconditioned vehicles, vikram tempos, tata trucks, sajha buses and adulteration of the fuel.

Dr. Sangeeta Shrestha: Four years service in Kanti Hospital.

Air quality in Kathmandu is very poor.

Health impact on children: Asthmatic wheezing, repeated cough & cold, bronchitis.

Out of 300 children's check-up everyday in hospital around 150-160 cases are of the respiratory diseases.

Dr. Madhusudan Pun

Seven years in Kanti Hospital.
Air pollution very alarming.

Health impact on children: Wheezing, asthma, bronchitis, pneumonia, repeated cough.
Everyday : 60% of OPD patients (children) visit hospital for check-up.

Suggestion: Air quality must be improved.

Dr. Faruq Mikrani

Air pollution in Kathmandu is extremely high.

Health impact on children: Allergic asthma, wheezy bronchitis due to air pollution rate are very high.

Dr. Seoma Verma

Air quality in Kathmandu is deteriorating everyday.

Health impact on children: Increase of respiratory diseases in children.

Out of 280-300 patients check-up in O.P.D service more than sixty percent are recorded of respiratory diseases.

Dr. Dhana Raj Aryal

Air pollution in Kathmandu is deteriorating.

Pollutants: Vikram tempos, unmaintained vehicles, like tata trucks, buses, and cars.

Dust pollution is also alarming high, especially Chabahil is more polluted than other parts of the city. (Dr. has private clinic in Chabahil also

Health impact on children: Children under 5 are suffered from bronchitis & pneumonia. Repeated cases are also seen twice in a month. School going children suffer from throat infection & cough.

Suggestion: Air quality must be improved without delay.

Dr. Ramesh Malla

Air pollution in Kathmandu is very drastic

Type of pollution: Mainly due to bad maintenance of road, dust pollution & vehicle emission.

Impact on health: Allergies, bronchitis, pneumonia, especially streptococcus seen in children, (Sore throat) (Air borne diseases rate is alarmingly high)

Chest infection & allergies rate are also quite high. (Carpet factories worker & cement factory worker). Once they develop or suffer from allergies, there's no cure, medicine can only suppress the diseases.

Treatment: Antibiotic for infections in the lungs, like bronchitis, pneumonia and throat infection. Since children are more susceptible to the Air pollution, because of the exposure to the air pollution, they offend get sick. There's no other way rather than prescribing the antibiotics which has bad side effects if taken frequently.

Tilganga Eye Hospital Tilganga

Dr. Rita Gurung, Deputy Medical Director

Air quality in Kathmandu is deteriorating. It has adverse effect on health o general public.

Health Impact: Recently school going children & other children have suffered from allergy c onjunctivitis. Conjunctivitis rate used to be high only in spring season, but these days due to air pollution, allergy conjunctivitis is seen throughout the whole season. Mostly repeated cases are observed. Even after medical treatment, eye infection is recorded frequent among same patients because of the exposure to the air pollution.

DATA COLLECTION FEOM BIR HOSPITAL, Kathmandu

2053 B.S. – Top ten Diseases

S.N.	Diseases	Total case	Total Deaths
1.	Cholelithiasis	458	7
2.	Chronic Cardio Pulmonary Diseases	269	36
3.	Head Injury Cases	254	26
4.	Cerbo Vascular Accident	207	45
5.	Chronic Renal Faliure	206	38
6.	ING. Hernia Cases	194	2
7.	Burns	190	33
8.	TB(Chest)	182	23
9.	Poisoning	174	18
10.	G.I Bleeding	160	11

2054 B.S. – Top ten Diseases

S.N.	Diseases	Total case	Total Deaths
1.	Cholelithiasis	492	2
2.	Chronic Obstructive Pulmonary	266	44
3.	Abdominal Hernia	228	1
4.	Burns	208	1
5.	Acute appendicitis	203	-
6.	Gastrointestinal	190	15
7.	Head Injury Cases	186	14
8.	Cerebrovascular Accident	219	52
9.	Poisoning	190	27
10.	Hypertension	168	13

Survey Data Collection : Dr. Basanata Pantha
Project Chief : Head Superintendent
Asst. Executive Member : Emergency Section
Roshani Thakur : Bir Hospital

TYPE OF DISEASES SEEN DUE TO AIR POLLUTION IN CLINICS

Bronchitis Asthma
Wheezing Bronchitis
Conjunctivitis
Skin Allergy
Pediatricians
ARI
Repeated History of ARI
Allergic Rash
Allergic Cough
Pneumonia, URCl
Respiratory Tract Infection
Eye Irritation

Doctor Comments: Diseases due to air pollution, seen most common at clinics.

Dr Dhana Raj Aryal : Kanti Hospital
Dr. Ramesh Malla, Dr. Dinesh Rayamajhi,
Dr. Naresh K.C. : Om Nurshing Home

THREE MAJOR AIR BORN DISEASES SEEN

S.N. Disease	Total Cases	Deaths
1. Chronic Cardio Pulmonary Diseases(CCPD)	535	80
2. Tuberculosis/Chest(TB)	182	23
3. Hypertension(HYPT)	168	13

SURVEY STUDIES ON AIR POLLUTION IN KATHMANU

General View of public:

Interview taken by Chanda Rana, Neenu Bista & Roshani Thakur (SEF)

Area: Maharajgunj Height

Putali Sadak

Thapathali

Kamaladi Height

Chahabil

New Road, Vikram Tempo Stand

Pulchowk

Date: May 15th, & May 27th 1998

ANNEXES



Department Of Radiology

Tribhuvan University Teaching Hospital
P.O. Box No. 3578, Maharajgunj, Kathmandu, Nepal

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To,

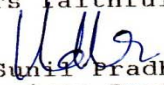
Date: 27th May, 1998

The Director
Save The Environment
Kathmandu, Nepal.

Madam,

In my clinical experience, there are many diseases which have resulted from Environmental pollution. I would like to relate a few examples. Many patients suffer from typhoid, diarrhoea, dysentery etc. due to water pollution and form a large majority of the patients coming to Teaching Hospital. Respiratory Diseases are also very commonly due to air pollution. Diseases like Chronic Bronchitis, emphysema, Asthma, etc. Commonly result from air pollution and all of them can cause chronic Cor-pulmonale. Nepal has the highest rate of Cor-pulmonale in the World. People working in carpet, garment and cement factories suffer from many occupational diseases. Chemicals produced by various factories and industries also cause a number of diseases in the skin and body. So, in my opinion Environmental pollution is an important pre-cursor of diseases affecting many patients who come for treatment in T.U. Teaching Hospital.

Yours faithfully,


Dr. Sunil Pradhan
Associate Professor,
Dept. of Radiology,
T.U. Teaching Hospital

World Environment Day 1998,

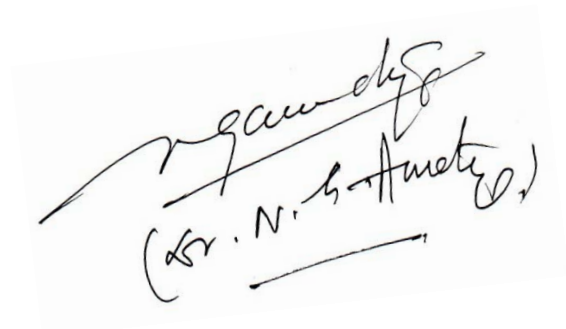
“ Let Us Breathe”

Campaign against Air Pollution Organized by
Save The Environment Foundation (SEF)

Sponsored by,
Executive Members of SEF

Doctor’s Opinion on “Air Pollution & its impact on Health in General Public”
Comparison of Rate of Respiratory disease, allergies from 1992-1998

According to our experiences with the patients who had respiratory problems, in my opinion the respiratory diseases like Allergic Bronchitis, Pnmeonia, in children & other respiratory diseases had increased recently due to heavy pollution of the city.



Handwritten signature and name in Hindi: *Dr. N. S. Anand*

Questions to General Public:

1. How do you find Air Quality in Kathmandu?
2. What are the pollutants of Air Pollution?
3. How do you feel when you are exposed to the busy road of Kathmandu?
4. Do you have any health impacts due to air pollution?
5. Is vehicle emission test, (Green Sticker) effective to control air pollution?
6. What is your suggestion for improving the air quality of Kathmandu?

Interviews taken by SEF's executive members.

Venue: Maharajgunj Height, Kamaladi Height, Chahabil, Balaju, Battisputali, Battisputali, Samakhusi, Rani Pokhari, Kupondol, Kamal Pokhari, Gyaneswor, Gaushala.

Doctor's interview taken by Chanda Rana

Photograph taken by SEF.

1. Krishna Bahadur Shrestha
 Off: Bansbari
 Air quality of Kathmandu getting worst.
 Cause: Uneducated people, political instability, lack of implementation of any strict rules & regulations.
 Health Impact: Chest tightness, nausea.

2. Nucche Bahadur
 Off: Maharajgunj-walking
 Air quality deteriorating. Health Impact: Headache, Eye Irritation.
 Survey of school going children:

3. Amrit Prasai, Sita Dahal, Renu Maskey, Govinda Aryal, Meena Serchan School by walking, Bhanubhakta Memorial School, Panipokhari
 Air quality drastic, because of the uphill of Maharajgunj, vehicle emission is terrible.
 Difficulty to go to school because of Traffic jam.
 Health Impact: After School, they feel tired, eye irritation, sometime dizziness etc.
 Suggestion: Get rid of vikram tempos.

4. Ganesh Thapa, Rajan Shrestha, Govinda Thanet, Rupa Thanet, Sita Maharjun, Tej Prasad, Meena Sthapit, Vikram Shrestha, Neeraj & Dheeraj.
 School: Pasupati Mitra Madhyamik Vidhyalaya, Chahabil Chowk.
 Air quality of chahabil is worst than other places.
 School by walking. White school uniform gets black.
 Health Impact: Eye irritation, tiredness, nausea. Class room also gets affected by air pollution, suffocation in the classes.
 Suggestion: Maintenance of the vehicle, strict rules & regulations should be formulated.

5. Roshan Dahal, DOjee Gurung, Ram Shrestha, Sanu Shrestha
 School: Vishwaniketan, Tripureswor school: School by walking
 Air quality in Kathmandu is worst.
 Health Impact : Eye irritation, nose block, difficulty in breathing etc.
 Suggestion : Conversion of vikram tempo (by Russian Grant)

6. Bipul Basnet : Unicef, Patan
 Air quality: Residential area free of pollution, traffic congestion area & city area is heavily polluted.
 Suggestion : Vehicle emission test must be implemented strictly. Regular vehicle maintenance, more greenery in Kathmandu, unleaded Gasoline & Road maintenance.

7. Bishnu Karki : Vikram Tempo Passenger
 Air quality very poor.

Health Impact : Repeated cough, Black sputum. Chest tightness.

8. Ganesh Koirala : Vikram Tempo Passenger
Air pollution is life threatening.

9. Sita Gurung : Vikram Tempo Passenger
Air quality is worst.
Nausea & headache.

10. Geeta Pantha : Bus & tempo passenger
Air quality pretty bad.
Eye irritation, nausea, headache.

11. Michael : US citizen, tourist, Hotel Puskar
Pollution in Kathmandu pretty bad.
Biking from Kathmandu to Pokhara made him really sick because of the emission from tata truck, tourist coaches.

12. Andrew Miller : US citizen
Pollution : Drastic black smoke makes sick.

INTERVIW WITH CAR RIDERS

1. Lokesh Rana : Himalayan Bank Ltd.
Air quality is lousy, car with green sticker, maintenance once in 3000 miles.
Suggestion : Vikram tempo conversion, regular maintenance of the vehicle.

2. Madan Kumar Malla : Engineer, Water supply sewerage.
Air quality in Kathmandu is worst, poor visibility black sputum while walking.
Health Impact : Nausea, headache.
Green Sticker : 6 month effective. There's rumour that green sticker could be easily purchased, no follow up by, Government.
Suggestion : Conversion of Vikram tempo, into safa tempo do not sound practical, (Disposal Problem) it will create great problem for the disposal of the discarded batteries. Adulteration of the fuel must be checked in petrol pumps in Kathmandu. Proper land fills management, more greenery in Kathmandu.

3. Binod Aryal : Chahabil resident since 2038. Chahabil getting over crowded, traffic congestion.
Tuk-Tuk Tempo more dangerous: Headache, Suffocation. Eye irritation, Sputum black.
Green sticker not effective.
Restriction in Putali Sadak, Singha Durba is not effective to control air pollution.
Suggestion : More battery operated tempo's trolley bus service.

4. Tashi : Chahabil motorbike rider
Mask is necessary while riding due to air pollution.

5. Roshan Morktan (Cyclist)
Air quality not that bad.

6. Khagendra Basnyat
Air quality drastic, Kathmandu is no more worth staying.
Industrial pollution & air pollution must be controlled. Cold and cough is common in Kathmandu. Leaders should pay attention to the deteriorating air quality.

INTERVIEW WITH TRAFFIC POLICE

Traffic Police from Chahabil & Gaushala have common comments on air pollution and its impact on their health.

Chahabil traffic post is more polluted than other Gaushala & Baneswor Post.
Health Impact: Eye burning, eye irritation, headache, repeated cold & cough, difficult to Cure, chest pain, dizziness, eye sight weak, weight loss, black sputum.

Masks are provided but it do not work well.
Suggestion : Maintenance of the vehicle, control dust pollution, it would be better if they are provided some sort of sunglasses to be protected from air pollution

INTERVIEW WITH TAXI AND TEMPO (THREE WHEELERS) DRIVERS

Taxi drivers interviewed

Naresh
Suresh Pariyar
Narendra Shahi
Vishma Karki
Siddhi
Phul Man Tamang

Total driving hours/day : 14-15 hours (6a.m. to 9 p.m.)

Duration of green stickers : 6 months

Cross checks are frequent. Failing to reach the standard, replaces the green stickers with red.

Difficulties : Due to lack of air conditioning facility drivers drive with open side windows for fresh air.

Health Impact : 90 percent of the drivers confess to have no health impacts. 10 percent of the drivers confess to have eye irritation, headache, black sputum.

Complain : Bad car condition, bad road condition, over population.

Suggestion : Mask is necessary for protection.

Tempo (three wheeler) driver interviewed

Narendra Shahi	Kamal Rai
Yagya Bahadur	Ram Maharjan
Raj Bahadur	Tilak Shrestha
Beth Bahabur	Sidhi Nakrmi
Buddhi Kansakar	Tika sthapit
Shumsher Shahi	Nucche Pradhan
Dev Bahabur	Bhim Rai
Bhimsma karki	Kancha Tamang
Krishna Sharma	Suresh Pariyar
Babu Kazi	Yogi Bahadur

Total Driving of green sticker 12-13 hours (6 am – 7am approx.)

Duration of green sticker: 6 month red sticker is given if they fail to attend the limit in cross checks.

Health Impact: No health impact – 90 percent of drivers confess. Headache, Backache
Black sputum – 10 percent of driver confess.

Number of Interviewees

General Public :	368 People
Tempo Drivers :	48 People
Taxi Drivers :	89 People

Summary of Doctor's Opinion

All the doctor's showed prime-concern for the deteriorating air quality of Kathmandu, and it's adverse affect on the health of the general public & especially to the children. Rate of respiratory diseases, allergies, skin allergies, allergy conjunctivitis due to air pollution are alarmingly high. Once they develop allergies & asthma, it cannot be cured permanently. Air pollution aggravates the allergies quite often.

Suggestions:

Air quality must be improved without delay, adulteration of the fuel should be checked, green sticker or vehicle emission standard test should be implemented strictly.

Summary of General Public's Opinion

Interviewees expressed their opinions for air quality as a drastic problem seen in Kathmandu after garbage pollution. Eight-four percent of the interviewees blamed the government for not taking environmental problems seriously, people expressed their disgust & were fed up with the political instability & corruption in the country.

Vehicle emission test also falls in to the category of government's epidemic disease called open corruption. They cited examples of vehicles running on the streets belching black smoke with green stickers on.

Suggestion:

Strict implementation of vehicle emission standard test, maintenance of the road, get rid of vikram tempos or few suggested for conversion, tata trucks and sajha buses are also the major culprits for air pollution so they must be checked, pollution in Kathmandu that severe. They blamed NGO's & INGO's for provoking the issue.

Three percent of the interviewees didn't fell air pollution that drastic in the valley, because they live in residential areas & ride well maintained A.C. Car. They are not exposed to air pollution so they do not have any health impact yet.

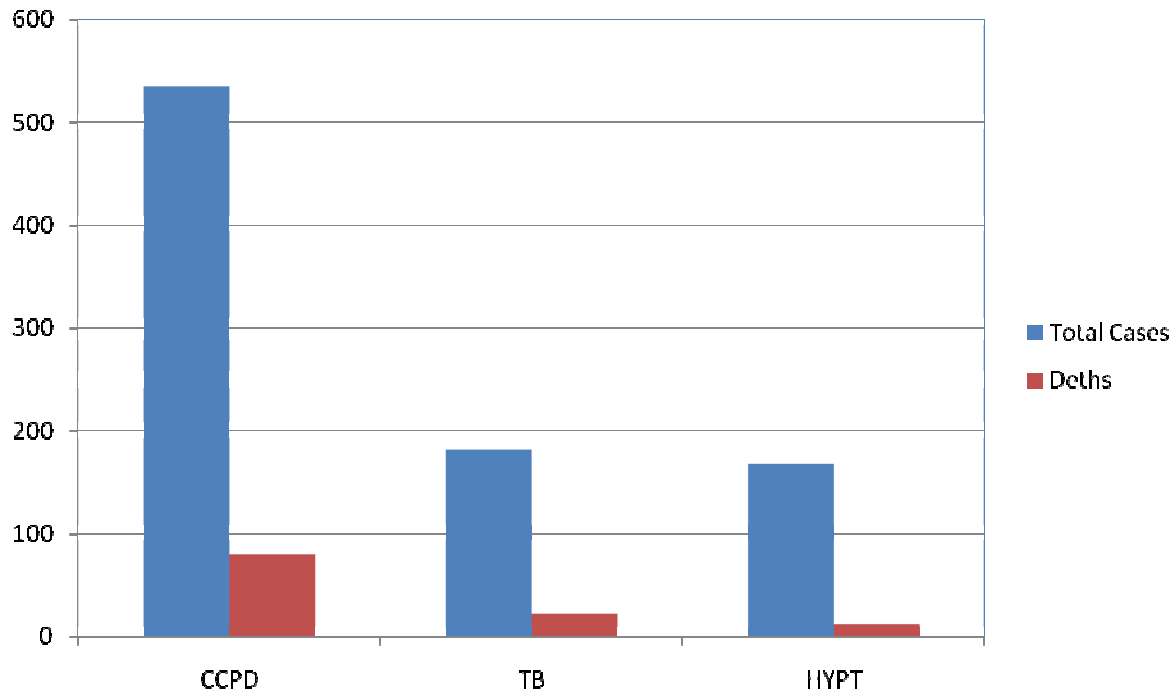
Seven percent of the interviewees didn't understand what air pollution is.

General opinion of tempo drivers

Ninety-nine percent of the tempo drivers (interviewees) told that though air quality in Kathmandu is deteriorating, they are exposed to the air from 7 am to 6 pm but they do not have any health impact yet, because their vehicles have been well maintained & have green stickers on.



Chanda Rana
Executive Chairperson
Save The Environment Foundation (SEF)



CONCLUSION

The Deteriorating condition of the air quality of Kathmandu valley has become every ones concern. To breathe better air, the prevailing situation of the quality of air has to be changed to better for which a lot of efforts have to be put in from all the concerned authorities and parties. Better air in future would certainly cut a lot of medical expenses and would generate substantial saving in the medical field.



Vehicle emission ?





Interview with Tempo Drivers



Deteriorating air quality ??





Vikram Transport



Interview with Bus Drivers



Severity of air pollution, people are seen with the masks.



Interview with General Public



SEI's EXCURSIVE members at NATIONAL Tuberculosis Center



Interview with Doctor Digha Singh Bani, Director NTC



Interview with Doctors at Karni Children Hospital



Interview with Doctor Sunil Pradhan, Teaching Hospital



Interview with Parents at Kasturba Children Hospital



Interview with Traffic Police



Interview with Motorcycle Riders

