



## ENVIRONMENTAL POLLUTION AND HEALTH STATUS OF MECHANICS CIVIL SOCIETY

(With special reference to work shop area in Tarikere town, Chikkamagalore District  
Karnataka state)

A Sociological study

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### Abstract

#### **Pollution:**

According to America's most trusted online dictionary by name Merriam Webster, the action or process of making land, water, air, etc dirty and not safe or suitable for use is called as pollution. There are several types of pollution they are mainly soil pollution, water pollution, air pollution, Radiation pollution, Chemical pollution, Oil spill pollution, noise pollution and others.

#### **Air pollution:**

Air pollution can be defined as the presence of toxic chemicals or compounds (including those of biological origin) in the air, at levels that pose a health risk.

My study area Tarikere town has 35,942 population, it has got nearly 3,600 vehicles are running on the roads daily including two wheelers, three wheelers, four wheelers, multi wheelers and earth movers. For the above said vehicles the repairing area is called as workshop area where hundreds of mechanics are repairing vehicles regularly cause air pollution in and around the workshop area causes environmental pollution and creates several health problems for the entire 35,942 civilians is best example for development by buying vehicles, consuming petroleum products like diesel (HSD), consuming petrol (MS) and lubricants creating disparities among the vehicle owners and non vehicle owners and contributing huge quantity of pollutants to the environment and creates enormous problems in the civil society.

The health condition of mechanics working in Tarikere town workshops, Garages, service stations, is not so good; they are suffering from different kinds of health problems due to pollution. Nearly there are 100 mechanics working in Tarikere work shop area are suffering from social and economical problems, the surrounding civilians society is also suffering from the pollution created by workshops, Garages, service stations.

**Key words:** Petroleum products, pollution, environment, industry, civilian society, economic life.



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### **Introduction:**

The word petroleum comes from Greek. The term frequently used to refer to mineral oils produced by distillation from mined organic solids such as cannel coal and refined oils produced from them, they are derived from crude oil as it is processed in oil refineries, they are collection of well-defined pure chemical compounds, petroleum products are complex mixtures.

Petroleum products are very essential products for transportation, heating, electricity generation, asphalt and road oil. They are used to make chemicals, plastics and synthetic materials which we are using in daily life. For the year 2016-2017 India consumed 23,765 metric tons of petrol, 76,015 metric tons of diesel and 3,353 metric tons of lubricants.

In my study area According to 2011 census Tarikere town has 35,942 population, it has got nearly 3,600 vehicles are running on the roads daily including two wheelers, three wheelers, four wheelers, multi wheelers and earth movers. For the above said vehicles the repairing area is called has workshop area where hundreds of mechanics are repairing vehicles regularly cause air pollution in and around the workshop area causes environmental pollution and creates several health problems for the entire 35,942 civilians is best example for development by buying vehicles, consuming petroleum products like diesel (HSD), consuming petrol (MS) and lubricants creating disparities among the vehicle owners and non vehicle owners and contributing huge quantity of pollutants to the environment and creates enormous health problems, polluting the environment in the name of development providing opportunities for automobiles industry, and influences economic life of Tarikere people.



**Objectives of the study:**

- To analyze the health status of mechanics and civil society due to environmental pollution.
- To collect the information about the health conditions of workshop personnel through medico-sociological prospective.
- To know economical and social status of mechanics.

**Hypothesis of the study:**

- Health statuses of workshop personnel are not good.
- Health conditions of civilians in and around workshop area are not good.
- Economical and social status of workshop personnel is not satisfactory.

**Statement clarification:**

**Environmental pollution:** The sum total of all surroundings of a living organism, including natural forces and other living things, which provides good conditions for development and growth as well as of danger and damage. Natural resources such as lakes, rivers, forests, wildlife, etc. have a pivotal role in Indian lifestyle but growing population of the country is increasing pressure on environment.

**Air pollution:** Air pollution means Air pollution can be defined as the presence of toxic chemicals or compounds (including those of biological origin) in the air, at levels that pose a health risk. In an even broader sense, air pollution means the presence of chemicals or compounds in the air which are usually not present and which lower the quality of the air or cause detrimental changes to the quality of life (such as the damaging of the ozone layer or causing global warming).

**Health status:** - It's the condition of the person mentally, physically and socially well being Health status of mechanics medico sociological study refers to disease which effects human life who are repairing, servicing the vehicles directly and indirectly affected by air pollution in workshop area, and it affected the health of surrounding civilian society.

**Mechanics:**

Mechanics are the personnel who are engaged in repairing, servicing the automobiles and earth movers as and when requires. They are not well educated, their health condition is not so good, and their economic condition and living condition in the civilian society is not satisfactory.

**Civilian society:**

In and around the workshop area the commercial establishment and residential areas are mixed. There is no separate, isolated area for mechanics workshops. By repairing the automobiles and earth movers they will create Smokey air, and pollute soil, water, by leaving waste particles of petroleum products (Used Lubricants), waste cloths, waste spare parts, chemical effluents into the drains of the workshop area which will enter into the water bodies of the town. (Bore well, Open well, ponds, tanks, and so on). It will create environmental problems on civil society.

**Methodology:**

In this study we have used simple random sampling method on selected 20 respondents. We have used direct interview method for the collection of information by respondents. Who are working as mechanics? And also used primary and secondary sources to collect the data with medico-sociological prospective.

**Sources of information**

- 1) **Primary resources:-** To collect the primary information I used self prepared questionnaire on medico-sociological prospective for interview. Finally information is collected from 20 respondents.
- 2) **Secondary resources:-**we have collected information from Articles, journals, library, news papers and websites.

**Theoretical perspectives:**

We used medico-sociological prospective for this successful study.

**TOPOGRAPHICAL FEATURES OF THE STUDY AREA:**

Tarikere is a Taluk in Chikkamagalore district in the state of Karnataka of India. The headquarters of Tarikere taluk is a town of the same name. The town has derived its name from number of water tanks by which the town is surrounded (Kere is a large water tank). There are a large number of tanks in and around Tarikere, namely, Chikkere, Doddakere, Dalavikere, Ramanayakanakere, Kendarahalla etc. Tarikere taluk is famous for areca nut, coconut, betel nut, mango, and other horticulture crops. It is also famous for onion, potato, chilly and other commercial crops and it is famous for paddy crop also. There is one industry called vignan industries limited (VIL).

**DATA ANALYSIS:**

The data collected by using all the research methods, and others sources are analyzed by essential statistical techniques by using analysis of data research report. The data was collected on medico-sociological prospective.

**Table. 1 Personal Profile of the Respondens**

SL NO	Personal profile of the Respondents				
1	Age	18-28	29-39	40-50	51+
		05	07	06	02
2	Gender	Male			Female
		20			0
3	Caste	SC	ST	OBC	Others
		01	01	01	01
4	Religion	Hindu	Christian		Muslim
		04	00		16
5	Education	Illiterates	Primary education	Secondary education	Higher education
		00	05	15	0
6	Yearly Income	Up to 60,000	60,001 to 75,000	75,001 to 1,25,000	
		09	06	05	
7	Marriage	Married	Bachelor	Widow	
		10	10	00	
8	Family	Joint	Nuclear		
		00	20		

In demographic information age, gender, education qualification, , marital status, income size type of family etc, are various information's are followings.

- **Age:** Age is the important factor at the time of interviewee because if the respondents are below 18 years ago they will be considered as minors. They are not eligible into any contract according to **Indian contract act-1872**. I have interviewed the respondents from age group 18 to 60.
- **Gender:** We interviewed 100% of the male respondents.
- **Cast:** At the time of research in India cast plays an important role even though India is secular state. We interviewed 05% SC, 05% ST, 05% OBC and others 5%.

- **Religion:** India is the mother land of several religions. Even though it is a secular state. All the statistics are collected on the basis of religion like Hindu, Muslim, Christian. We interviewed Hindus 20%, Christians 00%, and Muslims 80%.
- **Education:** Education plays in important role in India. Due to several governmental and non-governmental (NGO`s) intuitional efforts. Majority of the respondents are literates. In the interview 00% are illiterate, 25% having primary education, 75% having secondary education.
- **Annual income:** 45% of the respondents having income of 60,000 per year, 30% respondents are having income of 75,000 per year, 25% respondents having income of 1,25,000 per year.
- **Marriage:** we have interviewed 50% Married mechanics and 50% Bachelor mechanics.
- **Family:** we have interviewed 100% nuclear family mechanics.

**Table: 02 Health statuses of mechanics**

Sl.No.	Components of Health status	Yes	No
01	Are you suffering from Respiratory problems?	80%	20%
02	Are you suffering from Skin Allergies problems?	75%	25%
03	Are you suffering from Irritation problems?	60%	40%
04	Are you suffering from Anemia?	50%	50%
05	Are you suffering from Headache problems?	50%	50%
06	Are you suffering from Nausea?	55%	45%
07	Are you suffering from Euphoria?	50%	50%
08	Are you suffering from Sound pollution?	50%	50%
09	Are you suffering from ENT problems?	40%	60%
10	Are you Affected by Smokey air in your workshops, Garage, service station?	80%	20%
11	Are you suffering from Obesity?	45%	55%
12	Are you suffering from Joint pain?	50%	50%
13	Are you suffering from Blood pressure?	55%	45%
14	Are you suffering from Sugar problem (Glaucoma)?	25%	75%

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15 Are you socially suffering due to the  
environmental pollution of petroleum 50% 50%  
products?

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- **Respiratory problems:** 80% of the mechanics are suffering from respiratory problems. Petrol contains small amounts of benzene. Benzene is human carcinogen. When benzene content enters human respiratory system along with air it causes respiratory irritations. Then it leads to respiratory problems. To minimize the respiratory problems by petroleum products pollution, who is working in workshops, Garages, Service stations, atmosphere should wear mask, and working place should be open to free air circulation. According to Dr CN Manjunath, director and head of Cardiology Sri Jayadeva Institute of Cardiovascular sciences and research, around 20% of the heart attack cases admitted to the ICU at the institute is caused due to air pollution. Most of the patients with heart attacks caused due to air pollution are drivers.
- **Skin allergies problems:** 75% of the mechanics are suffering from Skin allergies. The hydro carbon ( $C_nH_{2n+2}$ ) contents in petroleum products will lead to allergic problems. The skin allergies problem will lead to immune system disorders, medication and infections. Allergies will lead for triggering an immune system response then it will lead to allergic skin condition called Atopic Dermatitis (Eczema). To reduce skin allergic problems the peoples working in workshops, Garages, Service stations, should not handle the petroleum products with bare hands. They must wear the suitable rubber leg and hand glosses.
- **Irritation problems:** 60% of mechanics suffering from irritation problems. Irritation will leads to acute and chronic health problems associated with petroleum products. It will lead to tightness of chest and breathing difficulties. The hydro carbon contents and small amount of benzene will effects the nervous system and leads to irritation problem. People working in workshops, Garages, Service stations, should take care of their health. For Some people the ingredients of petroleum products will not harm, but of some people who as less resistance should keep away from petroleum products.
- **Suffering from Anemia:** 50% of the mechanics are suffering from Anemia problems. Anemia is a health condition due to deficiency of normal red blood cells that produce the oxygen carrying pigment hemoglobin. A workshop, Garages, Service stations, is full of Smokey air due to motor vehicle emissions which delivers carbon dioxide. Which is

harmful to health and it reduces to availability of oxygen in the workshops, Garages, Service stations.

- **Headache problems:** 50% of mechanics are suffering from Headache problems, The continuous sound created by vehicles starting point and vehicles horn at the workshops, Garages, Service stations, will affect the nervous system. INHALATION OF petroleum products can cause headaches, rapid heart rate, tremors, and confusion. Gasoline contains small amount of benzene. Benzene is harmful to human life and it is carcinogen. To keep away from headache problem the workshops, Garages, Service stations, the mechanics working in retail outlets should be keep away from workshops, Garages, Service stations at the regular intervals.
- **Nausea (vomiting) :** 55% of mechanics suffering from Nausea problems Inhalation of petroleum products will leads to Nausea. Benzene which is present in petroleum products will create problems regarding Nausea. Benzene is a compound of crude oil and petrol that can be harmful even at base level. Apart from vehicular exhausts, Inhalation of Benzene will leads to lymphomas, a cancer that begins in immune system cells called lymphocytes. Totally benzene is a nasty pollutant. To avoid this in mechanics should follow the safety methods on the suggestion of the experts.
- **Euphoria (excitement) :** 50% of the mechanics are suffering from Euphoria problems at the time of repairing, servicing the vehicle the potential hazards of swallowing hydrocarbon leads to euphoria. Euphoria will give an experience of intoxication in human brain. Some human beings get intoxicated due to potential hazards of hydro carbons. After some time people will be addicted to hydro carbons. To avoid the problem the mechanics should keep good health practices. And they should develop natural resistance to euphoria.
- **Sound pollution:** - 50% of the mechanics are suffering from sound pollution, at present available statistics a single mechanic will attend nearly 35 vehicles per day Including two wheeler, three wheeler, four wheeler, commercial vehicles and others. Each vehicle will horn to draw the attention of the mechanic to receive the service. So the mechanic who is working in the workshops, Garages, Service stations should hear the sound of horn coming from entering above said vehicles. The sound is calculated in decibels followed by Canadian federal noise regulations. The sound occupational exposure limit (OELS) for noise is 85 decibels, but generally mechanics will hear 110 decibels sound level. In India



db legislation act I-NCE-1997 has fixed minimum 90 decibels peak 140 decibels as upper limit. But usually vehicles will deliver more than peak upper limit in India. Which will affect the mechanics ear and creates ENT problems finally it will lead to partial dimness for the mechanics. The vehicle driver should be sound conscious. The government should impose penalty on sound polluters regularly. By the high noise will leads to a situation were in a normal person can lose the ability to hear properly.

- **ENT problems :**

40% of the mechanics are suffering from ENT problems. Ear infections usually begin with a viral infection of the nose and throat. Ear infections may also occur when you have allergies. Symptoms of a middle ear infection include earache, hearing loss, and feeling of blockage in the ear, fever, and dizziness.

Inhalation of petroleum products and petroleum jelly or mineral oils will lead to lungs problems. The inhalation of petroleum products causes nasal secretions and it is swallowed. At the time small amount of petroleum products, petroleum jelly will migrate into the windpipe (trachea) and lungs. The accumulation of petroleum particles' and petroleum jelly can accumulate in the lungs leading to potentially serious inflammation known as lipoid pneumonia. The vehicle drivers should be educated not to create heavy noise at workshops, Garages, service stations area.

The throat is a very sensitive and vital organ in human body which observes the petroleum vapors which are available with air will affect the minute organs that are present in throat. Inhalation of petroleum products will cause dry cough, a scratchy feeling at the back of the throat. In summer season allergies are common cause of throat irritation.

- **Smokey air problem:-** 80% of the mechanics are suffering from Smokey air problem. Breathing of Smokey air will leads to respiratory irritation and shortness of breath and can worsen medical conditions such as asthma and heart diseases. There is also a chance of chronic health effect from exposure to the components of Smokey air. To avoid Smokey air the vehicle engine should be maintain in a very well manner. And the vehicle engine should not raise in workshops, Garages, service stations area

- **Obesity problem:-** 45% mechanics are suffering from obesity problems, This is because unhealthy and untimely food practices by the mechanics because of work load. Obesity is a major factor for cardiovascular disease. According to ministry of health and family

welfare along with the Indian council of medical research released updated guidelines in 2012 that a Body Mass Index (BMI) over 23 kg/m<sup>2</sup> is considered to be overweight normal BMI should be 18.0-22.9 kg/m<sup>2</sup>. Over weight are 23.0-24.9 kg/m<sup>2</sup>. The mechanics and personnel should perform jogging, walking, daily. The mechanics and personnel should take minimum required calories of food.

- **Joint pain:-** 50% of the mechanics are suffering from joint pain problems, because of their work load. Any damage to the joints from disease or injury, are by continues physical, mental stress on the joints will lead to osteoarthritis, rheumatoid arthritis, bursitis, gout, strains, sprains and other injuries. To overcome this problem the mechanics should take rest timely. Not create pressure on joints.

- **Blood pressure :-**

Definition of BLOOD PRESSURE

pressure that is exerted by the blood upon the walls of the blood vessels and especially arteries and that varies with the muscular efficiency of the heart, the blood volume and viscosity, the age and health of the individual, and the state of the vascular wall.

55% of the mechanics are suffering from blood pressure problems after the age of 45.

Mechanics working with work pressure will suffer from high blood pressure (hypertension) can quietly damage the health. The hypertension is a risk factor more than heart disease. If the patient is not treated well in time it will lead to poor blood flow. Hypertension gradually increases the pressure of blood flowing through arteries. Healthy arteries are flexible strong and elastic. Their inner lining is smooth so that blood flows freely, supplying the vital organs and tissues with nutrients and oxygen. To keep blood pressure in normal level mechanics should practice good health habits. For Further problems they should consult the doctor.

**Low blood pressure:** - some mechanics will suffer from low blood pressure because of their work pressure.

**Blood pressure chart:**

Top number (systolic) in mm Hg	Bottom number (diastolic) in mm Hg	Your category*
Below 120	and Below 80	Normal blood pressure
Between 120-139	or Between 80-89	Prehypertension
Between 140-159	or Between 90-99	Stage 1 hypertension
160 or higher	or 100 or higher	Stage 2 hypertension

• **Sugar problem (Diabetes) :-**

25% mechanics are suffering from Diabetic problem at different ages. Diabetes is due to both the pancreases are not producing enough insulin and the cells of the body are not responding properly to the insulin produced.

- **Environmental pollution:-** 50% of the mechanics aggress that petroleum products will create environmental pollution.

**Air Quality Index (AQI) and Health Implications (HJ 663-2012)**

AQI	Air Level	Pollution	Health Implications
0–50	Excellent		No health implications.
51–100	Good		Few hypersensitive individuals should reduce outdoor exercise.
101–150	Lightly Polluted		Slight irritations may occur, individuals with breathing or heart problems should reduce outdoor exercise.
151–200	Moderately Polluted		Slight irritations may occur, individuals with breathing or heart problems should reduce outdoor exercise.
201–300	Heavily Polluted		Healthy people will be noticeably affected. People with breathing or heart problems will experience reduced endurance in activities. These individuals and elders should remain indoors and restrict activities.
300+	Severely Polluted		Healthy people will experience reduced endurance in activities. There may be strong irritations and symptoms and may trigger other illnesses. Elders and the sick should remain indoors and avoid exercise. Healthy individuals should avoid outdoor activities.

In and around workshop, Garage, service station areas the air is highly polluted at the working hours.

**Table no 3:- Economics status of workshop personnel (mechanics)**

Sl no	Components of economic status	Yes	No
01	Own Residence	30%	70%
02	Own vehicle (Two wheeler)	75%	25%
03	Any other source of income	20%	80%
04	Income sufficient for Children's education	20%	80%
05	Income sufficient for family maintenance	65%	35%

- **Own residence:-**

Only 30 % of the respondents having their own residence, the government have to provide residences to mechanics at affordable prices.

- **Own vehicle (Two wheeler):-**

75 % respondents have old two wheelers, mechanics are using very old vehicles it will causes air and sound pollution so old vehicles should be replaced by the respondents to BS IV standard vehicles.

- **Any other source of income:-**

Only 20% of the respondents have other sources of income. The respondents should search other avenues for other source of income by doing other part time job is self employments.

- **Income sufficient for Children's education:-**

20 % of the respondents opened that their income is sufficient for children's educations in government institutions. So the government should provide affordable education to respondent children.

- **Income sufficient for family maintenance :-**

65 % of the respondents opened that their income is sufficient for family maintenance in a average leaving standards. The respondents and the governments should plan to improve their income in a constructive manner.

**Table no 4:- Social status of workshop personnel (mechanics)**

Sl no	Components of social status	Yes	No
01	Is your family respecting your profession	60%	40%
02	Is your society respecting your profession	50%	50%
03	Is government providing any social concern assistance	-	100%
04	Banks finance	40%	60%
05	Assistance from NGOs and self help groups	55%	45%

• **Is your family respecting your profession:-**

60 % of the respondents opened that their family are respecting their profession. The family members have to change their mindsets regarding the respondent's profession.

• **Is your society respecting your profession:-**

50 % of the respondents opened that society is respecting their profession. The society has to change its mind set towards respondent's social status thinking that work is worship.

• **Is government providing any social concern assistance:-**

100 % of the respondents opened that the governments are not providing any social welfare concern facilities to mechanics. It is an unorganized labor sector. The government has to provide some social welfare concern facilities to mechanics.

• **Bank finance:-**

40 % of the respondents are able to take financial assistances from nationalized banks. Majority of the respondents are not able to take bank assistances because of banker's attitude. The government should direct the nationalized bank to launch pro mechanics financial assistance plans to help the unorganized sector.

• **Assistance from NGOs and self help groups:-**

55 % of the respondents are getting financial assistances from NGOs and self help groups to commission their own workshop. Government should help the mechanics to commission their own workshop by providing in time financial assistances to respondents.

**Findings:**

- In and around workshop, Garage, service station areas the air is highly polluted at the working hours.
- The health conditions of mechanics and personnel of workshop, Garage, service station, civil society are in a bad condition.

- The economic conditions of respondents are not satisfactory to lead average standard of life.
- The social conditions of respondents are not good, the family and the society of the respondents mind set to be changed in a positive manner thinking that work is worship and there is a need to honor the dignity of labor.

### **Provement of Hypotheses:-**

By above all studies and statistics we can prove that the health of mechanics and personnel working in workshop, Garage, service station, civil society are detoriating, in one way or other way.

### **Suggestions:-**

I suggest the government, oil companies, the health ministry, should study this aspect. And the standard guidelines should be released to the concerned authorities. The suggestion given by the health ministry and the government should be strictly executed. In the interest of mechanics and personnel of workshop, Garage, service station and the civilians society to decrease the environmental pollution and to improve the health status of mechanics and personnel of workshop, Garage, service station, And the civilians living in and around the workshop area.

15 years aged vehicles both commercial and non commercial should be removed from the roads. In this regard the government should enact laws.

Government should provide financial assistances through their agencies to help the respondent to commission the workshop of their own.

The government and the NGOs should help the respondents to improve the social status of the respondents.

### **Conclusions:**

The mechanics and the personnel of workshop, Garage, service station and the civilians should be more environmental conscios, health conscios, they must avoid polluting the soil, Air, water and environment. They should follow the modern techniques and tools to repair, and to service the automobiles and earth movers. The workshop area should be kept out of the civilian residential area. In workshop area more plants should be grown to control pollution. The local bodies, The NGO's, and the respective government should monitor the pollution level by issuing strict guidelines. The government must penalize

and punish the environment polluters as much as early possible to save the mother earth for the new generation.

The governments should take necessary action and execute suitable plans to increase the financial position of respondents.

The society should think in the positive direction towards the respondent's social status.

This globe is meant for future generation contributed from our fore fathers. So it is our social moral legal, noble, duty to save our mother earth.

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