



**Research Article**

## **IMPACT OF STONE CRUSHER INDUSTRY UNITS ON RURAL PEOPLE'S HEALTH AND CROPS – A CASE STUDY OF CHIYYEDU VILLAGE**

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### **ABSTRACT**

The issues related to greenhouse gas emissions and various kinds of pollution resulting in severe environmental and ecological imbalance have been gaining global attention since several decades. United Nations is playing a key role in coordinating majority of the countries to solve the issue of global warming and climate change through protecting environment we live in for a peaceful and fruitful life. India is marching ahead and is taking all the possible measures to overcome the issue of pollution in any form that cause damage to the people, livestock and property. India is a developing country and is striving to develop the industrial sector and other allied sectors. One such initiative is 'Make in India' policy. The main motto of this policy is to attract the capital and technological investment and initiate product manufacturing in India. Many Indian and global investors are coming ahead to start the industries, companies etc., to manufacture and sell their products and increase trade with many other countries. 'Zero Defect Zero Effect' is a slogan coined by the Prime Minister of India Shri Narendra Modi which signifies that the production mechanisms wherein products have no defects and the process through which the product is made has zero adverse environmental and ecological effects. This slogan has not been seriously taken into consideration by the entrepreneurs and thereby causing huge pollution in turn affecting the health, crops livestock and property of the people in the nearby areas of their established industries. This research article focuses on the impact of the stone crusher industries on the rural people's health, crops, property damage and death of livestock in the study area and offers several suggestions to overcome them.

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### **INTRODUCTION**

Medium and small scale industries are emerging like mushrooms in the drought prone region of Anantapuramu district in Andhra Pradesh. The status of the drought prone district to Anantapuramu district was identified by the World Bank. The stone crusher industry is included in the orange category list in the state of Andhra Pradesh. Due to plenty of available raw material many investors in the field of stone crushing industry with the help of the loan provided by the banks are coming ahead to undertake the production of the construction material useful for mixing with cement and with other binding products to develop the infrastructure like roads, bridges, buildings etc. Majority of these industries are not taking precautionary measures to overcome the pollution that is causing severe problems to the people living in the nearby villages. The government agencies have laid down rules and regulations but need adequate staff to regularly monitor and implement the guidelines and take action on

those which do not fulfil the criteria fixed by the government. The pollution that is spreading like a wildfire in the environment with silica dust particles not just affects the nearby population but also causes environmental damage leading to climatic changes drastically. This issue further leads to floods, drought, earthquakes, epidemic etc. Implementation of strict rules and controlling all kinds of pollution is the only precaution to overcome this issue.

#### **Research Problem**

India is marching ahead in all the sectors. A number of policies have been made to give a boost to the industrial sector. These investors are coming ahead to establish and run new small, medium and large scale industries. These industries are bound by strict rules and regulations to take measures to control all kinds of pollution and should take precaution to not affect the health, livestock, damage to the property etc. Many industries after obtaining the license do not fulfil the requirements prescribed and shortly after commencing the work gradually cause huge pollution that mainly come under the orange category. One among such industry is the stone crushers and to obtain the raw material the blasting has to be done in the nearby allotted area due to

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which the houses of the people residing in the surrounding areas are being damaged partly or fully, cracks in the walls are a common feature. Apart from that the pollution caused due to dust is affecting the health of the people with the disease called silicosis (is a form of lung disease caused by the inhalation of the crystalline silica dust and is marked by the inflammation and scarring in the form of nodular lesions in the upper lobes of the lungs. It is a kind of pneumoconiosis), crops of the farmers, health of the livestock etc. This study intends to analyse the perception of the affected people due to the stone crushing industries and the steps undertaken by the Andhra Pradesh Pollution Control Board and other responsible agencies and offer suggestions to overcome the issue in the study area.

### Objectives of the study

#### The study has the following objectives

- To study the functioning of Andhra Pradesh Pollution Control Board.
- To study the rules prescribed for the functioning of the stone crushing industry in Andhra Pradesh.
- To analyse the impact of the stone crushing industry on the people in the study area.
- To highlight the issues or drawbacks associated with the stone crushing industries and the affected population in the study area.
- To suggest several measures to be taken by the State Government, NGO's and other stakeholders to overcome the issue in the study area.

### Scope of the study

The scope of the study is limited to Chiyyedu village in the Anantapuramu District in Andhra Pradesh.

**Table 1** Socio-economic indicators of Chiyyedu village

Sl.No.	Particulars	Male	Female	Total
1.	Total number of houses			1,245
2.	Population	2,589	2,426	5,015
3.	Children (0-6)	279	218	497
4.	Scheduled Caste	595	558	1,153
5.	Scheduled Tribe	33	24	57
6.	Literacy	69.91(%)	49.00 (%)	59.69 (%)
7.	Total Workers	1,518	1,319	2,837
8.	Main Workers	----	----	2,273
9.	Marginal Workers	100	464	564

Source: Census of India- 2011

### Caste factor in Chiyyedu village

The Schedule Caste (SC) constitutes 22.99 % while Schedule Tribe (ST) were 1.14 % of total population in Chiyyedu village.<sup>1</sup>

### Work Profile of the study area

In Chiyyedu village out of total population, 2837 were engaged in work activities. 80.12 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 19.88 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2837 workers engaged in Main Work, 1018 were cultivators (owner or co-owner) while 880 were agricultural labourers.<sup>2</sup>

### Overview of the study area

Chiyyedu is a large village located in Anantapur of Anantapur district, Andhra Pradesh with total 1245 families residing. The

Chiyyedu village has population of 5015 of which 2589 are males while 2426 are females as per Population Census 2011.<sup>3</sup> In Chiyyedu village population of children with age 0-6 is 497 which makes up 9.91 per cent of total population of village. Average Sex Ratio of Chiyyedu village is 937 which is lower than Andhra Pradesh state average of 993. Child Sex Ratio for the Chiyyedu as per census is 781, lower than Andhra Pradesh average of 939.<sup>4</sup> Chiyyedu village has lower literacy rate compared to Andhra Pradesh. In 2011, literacy rate of Chiyyedu village was 59.69 per cent compared to 67.02 per cent of Andhra Pradesh. In Chiyyedu Male literacy stands at 69.91 per cent while female literacy rate was 49.00 per cent. As per the constitution of India and Panchyati Raj Act, Chiyyedu village is administrated by Sarpanch (Head of Village) who is elected representative of village.<sup>5</sup>

### Significance of the study

This study highlights the pollution caused and the plight of the affected population, crops, livestock, condition of houses, collapsing borewells due to blasting in the hills for the production of the construction material by the stone crushing industries. It also focuses on the administration and functioning of the Pollution Control Board in Andhra Pradesh. Its findings will be significant for the more effective and active functioning of the Andhra Pradesh Pollution Control Board and other related departments in protecting the affected population and to frame additional rules to control the stone crusher industries in order to overcome the issues faced by the people in the study area. This study throws a light on the similar issues faced by the people residing near the stone crushing industries in entire Andhra Pradesh and in other states of India. The findings of the study further provides the policy makers, researchers, policy implementation agencies to take effective steps to overcome the similar issue throughout the country.

### Stone Crushing Industries

The conversion of naturally occurring rock into crushed and broken stone products involves a series of distinct yet interdependent physical operations. These include both quarrying and mining operations (drilling, blasting, loading and hauling) and plant process operations (crushing, screening, conveying and other material handling and transfer operations). The mined stones are transported to the crusher sites besides road through tractor trolleys, dump trucks or pay-loaders. The pay-loaders unload the mined stones into materials such as stone mines etc., Based on these operations, the workers are employed at different places as per the nature of work and are exposed to silica dust of different concentrations.<sup>6</sup> The stone crushing industries as per the pollution requirements should make sure that the raw material is wet enough to control the spread of silica dust to the nearby areas because it may cause silicosis disease and harm the water, livestock, crops etc. The blasting may cause the blocking of borewells and damage the old and newly constructed houses in the surrounding areas.

### Environmental Protection Act (EPA) 1986

An Act to provide for the protection and improvement of environment and for matters connected there with. Whereas the decisions were taken at the United Nations Conference on the Human Environment held at Stockholm in June, 1972, in which India participated, to take appropriate steps for the

protection and improvement of human environment. And whereas it is considered necessary further to implement the decisions aforesaid in so far as they relate to the protection and improvement of environment and prevention of hazards to human beings, other living creatures, plants and property.<sup>7</sup>

***How are the terms 'environment', 'environmental pollutant', 'environmental pollution' and 'hazardous substance' defined under the E.P.A. 1986?***

***According to Section 2 of E.P.A***

- a) 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.
- b) 'Environmental pollutant' means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be, injurious to environment.
- c) 'Environmental pollution' means the presence in the environment of any environmental pollutant.
- d) 'Hazardous substance' means any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures; plants, micro-organisms, property or the environment.<sup>8</sup>

***What are the requirements that are to be fulfilled under the E.P.A. by persons carrying on any industry, operation etc.?***

According to Section 7, no person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or emitted any environmental pollutants in excess of such standards as may be prescribed.<sup>9</sup>

***Penalties and Punishment for violation under the Environmental Protection Act***

Any failure to comply as per the Environmental Protection Act is dealt with the following actions by the government

1. Whoever fails to comply with or contravenes any of the provisions of this Act, or the rules made or orders or directions issued thereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five years or with fine which may extend to one lakh rupees, or with both, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.<sup>10</sup>
2. If the failure or contravention referred to in sub-section(1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to seven years.<sup>11</sup>

***What restriction does the E.P.A impose on private citizens with respect to courts taking cognizance of offences under the E.P.A. 1986?***

Under this Act no court shall take cognizance of any offence except on a complaint made by any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint,

to the Central Government or the authority or officer authorised as aforesaid.<sup>12</sup>

***Administration and Functioning of Pollution Control Board in the study area***

Andhra Pradesh Pollution Control Board has been playing a pioneering role in the field of environment protection. The Board works relentlessly in efficient implementation of environmental policies, laws, regulations, and develops frameworks to manage both wastes and natural resources of the State. APPCB has a state-wide presence with its Head Office at Hyderabad, and 3 Zonal and 9 Regional Offices covering the entire the State.<sup>13</sup>The Board is a statutory organization entrusted to implement Environmental Laws and rules within the state of Andhra Pradesh, India. The Board was constituted as State Board for Prevention and Control of Water Pollution, in 1976, under the Water (Prevention and Control of Pollution) Act. 1974, but was later rechristened as Andhra Pradesh Pollution Control Board, subsequent to the enactment of the Air (Prevention and Control of Pollution) Act, 1981.<sup>14</sup>

***Enforcement Activities of Andhra Pradesh Pollution Control Board***

The Board has the powers to direct closure, prohibition or regulation of an industry, operation or process or the stoppage or regulation of supply of electricity, water or any other service. The Board also imposes Bank Guarantees to ensure compliance in certain cases, issues time targeted directions to upgrade or rectify the pollution control systems and in extreme cases closure orders are issued. To carry out these enforcement activities the Board has a specialized division called the **Task Force Cell**.<sup>15</sup>

***Key Enforcement Activities of the Task Force Cell***

- Forwarding of complaints lodged by public to concerned Regional offices /Zonal office and coordinating of Regional offices / Zonal offices for inspection of defaulting industries against public complaints lodged.
- Preparation of Agendas for the External Advisory Committee (Task Force Committee) meetings and finalization of minutes of the committee.
- Follow up of the minutes of the External Advisory Committee (Task Force Committee) meetings.
- Issue of closure orders to defaulting industries/recalcitrant industries that have not complied with the Board standards and directions.
- Issue of Show cause notices and directions to the industries to the non-complying industries.
- Levying of Bank Guarantees against non-compliance of the directions issued by Board.<sup>16</sup>

***Environmental Awareness***

Spreading the awareness among public and citizens of the State about Environment Protection and Enhancement is another key areas of focus of the Andhra Pradesh Pollution Control Board (APPCB). APPCB in collaboration with NGO's and other organizations are regularly conducting various environmental Awareness Programmes on various events. The Awareness activities such as organizing seminars, workshops, campaigns, Kalajathas, Street plays, tree plantations, debate, painting, drawing competitions and other

environment related activities to school children's and general public are carried out in collaboration with NGO's/Trusts/Eco-Clubs and other organizations through the year.<sup>17</sup>

**Key Public Awareness Functions of the Board**

The Environment Education Wing section is for conducting Environment Awareness Programmes in Andhra Pradesh, involving Industries, Urban Local Bodies, Schools and other Organisations like NGOs, CBOs, Women Groups and general community. The section also issues media releases, rejoinders, analyse press reports, bring out publications including newsletters and annual reports. Other functions of this section include media conferences, world event days related to environment, participating in radio talks and TV interviews, event handling, participation in exhibitions and making documentary films for public awareness.<sup>18</sup>

**The Board has established Environment Education Wing for under taking the following activities**

- Conducting environmental awareness programmes, publicity campaigns and conducting major World Environmental events.
- Conducting media conferences periodically for dissemination of information on Board's activities and for creation of environmental awareness among public.
- Release of Board's advertisements through newspapers and environment related magazines.
- Networking and supporting NGOs and stakeholder departments for creating environmental awareness in the local community.
- Publishing of periodical reports and resource material such as posters, brochures, pamphlets and newsletters which are distributed in schools, industries and municipalities for creating environmental awareness.
- Conducting Rally with School/ College Students in the District Head Quarter create awareness among the public on green initiatives.
- Conducting Workshop/ Seminar in Colleges, Universities in coordination with NSS Coordinators on Biodiversity conservation, Municipal Solid Waste Management, Community environmental initiatives.
- Conducting Workshops in Hospitals on Bio-medical Waste Management practices.
- Conducting Workshops in Industry on Green building concepts, Waste Minimization, Cleaner production initiatives, Energy conservation etc.<sup>19</sup>

**Rules prescribed by the State Government for the functioning of Stone Crusher Industries**

The State Government of Andhra Pradesh has clearly specified the rules and guidelines for the establishment of the stone crusher industry of which a few significant are mentioned below

- The stone crusher industry units should construct a compound in such a way that the dust from the stone crusher doesn't spread outside its premises.
- The raw material and the output production should be in the wet form by spraying water regularly so as to control the dust coming out its production.
- The stone crusher industry should grow more long plants and trees around its compound in such a way

that controls the spread of dust to the nearby living areas.

**METHODOLOGY**

This study comprises of both the primary and secondary data. The universe of the study is one hundred rural respondents in Chiyyeduvillage of Anantapuramu District of Andhra Pradesh State. The research technique used in this study is simple random sampling method. This study is both exploratory and analytical in approach. To collect the primary data the interview schedule method has been used to analyse the perception of affected respondents due to the stone crushing industries in the study area and to identify the impact of the stone crushing industries on health, livestock, houses, borewells, plantation and crops. The secondary source is collected from various books, journals, local newspapers, district statistical information annual reports and concerned department websites. Several trust worthy informants have been picked up from the stone crushing industry units. The collected data has been tabulated and analysed through simple statistical tools and thereby the inferences have been drawn based on this in the study area.

**Table 2** Gender-wise distribution of the respondents N=100

Sl.No.	Gender-wise distribution	Percentage of the respondents (%)	Total (%)
1.	Male	59	
2.	Female	41	100

Source: Computed from the primary data

Table 2 indicates that the total universe of the study is 100 respondents. The male respondents constitute 59 per cent and the female respondents represent 41 per cent in the study area respectively.

**Table 3** Age wise distribution of respondents N=100

Age group	% of respondents
Toddler (12-36 months old)	00
Children (Below 18 years)	03
Youth (18-31)	26
Middle age (32-50)	42
Aged (50-60)	24
Senior Citizens (60 and above)	05
<b>Total</b>	<b>100</b>

Source: Computed from the primary data

Table 3 depicts the distribution of the respondents in the study area according to their age. The table reveals that the total respondents of the study constitute 100 members, the toddlers are not affected by the disease among the toddlers because they are carefully protected by their parents, the children below the age of 18 years cover 03 per cent, the youth in the age group of 18-31 constitute 26 per cent, middle age respondents in the age group of 32-50 cover 42 per cent, aged respondents in the age group of 50-60 represent 24 per cent, and the respondents belonging to the age group of 60 and above are recognised as the senior citizens by the Government of India and 05 per cent of them are covered in the study. The different age groups were selected for the study mainly to provide an overall scenario of the affected people in the study area.

**Table 4** Religion-wise distribution of respondents N=100

Religion	% of respondents
Hindu	69
Muslim	15
Christian	16
<b>Total</b>	<b>100</b>

Source: Computed from the primary data

Table 4 indicates that 69 per cent of the respondents are Hindus, 15 per cent of them are Muslims, 16 per cent of them are Christians respectively.

**Table 5** Caste-wise distribution of respondents N=100

Caste	% of respondents
Upper castes	53
OBC's	15
Scheduled Caste	19
Scheduled Tribes	13
<b>Total</b>	<b>100</b>

Source: Computed from the primary data

In table 5, it is shows that 53 per cent of respondents belong to upper castes, 15 per cent belong to other backward communities, 19 per cent of them belong to Scheduled Castes, 13 per cent of them belong to the Scheduled Tribes respectively.

**Table 6** Perception of the respondents in the study area N=100

Sl.No.	Respondents in the study area	Yes	No
1.	Do you have a (BPL) Below Poverty Line card ?	98	02
2.	Do you belong to Chiyveduvillage ?	100	00
3.	Is there any stone crushing industry near your Village?	100	00
4.	Do the stone crushing industry in your village causing pollution due to dust from the production of the construction material ?	100	00
5.	Did you inform the management of the stone crushing industry that it is causing pollution and health issues to the people residing in your Village?	23	77
6.	Did you bring it to the notice of the local press ?	06	94
7.	Did you bring it to the notice of the state news channels ?	02	98
8.	Did the pollution control board officials visited the affected area ?	21	79
09.	Did you complaint to the police officials ?	00	100
10.	Are you suffering from Silicosis disease ?	59	41
11.	Did you visit the doctor for dust related symptoms identified with yourself ?	87	13
12.	Do you own a small or medium agricultural or horticultural land for the purpose of cultivation near the stone crushing industry ?	32	68
13.	Do you have borewell facility in your agricultural farm in working condition ?	14	86
14.	Did any NGO's visit the affected people from the stone crushing industries near your farms and affected houses ?	00	100
15.	Are the walls of the house cracking due to the blasting undertaken by the stone crushing industries in the nearby mountains ?	89	11
16.	Did the news papers highlight the issues faced by you due to the stone crushing industries in your village ?	100	00
17.	Did the District Collector's office respond by visiting your village to the articles published in the news paper about the issues faced by the people due to the stone crushing industries ?	02	98
18.	Have the stone crushing industries grown enough plants around the company to control the pollution due to spread of dust ?	00	100
19.	Are the stone crushing industries utilising the water to make the raw material wet before the production of the construction material to control the spread of dust from the industry to the nearby villages?	00	100

Source: Computed from the Primary Data

### Findings of the study

#### The findings of the study are as follows

- 98 per cent of the respondents belong to below poverty line category and the rest 02 per cent of them belong to the above poverty line category.
- 100 per cent of the respondents belong to the study area.
- 100 per cent of the respondents replied that they are affected by the dust pollution caused by the stone crushing industry near their residing areas.
- 23 per cent of the male respondents replied that they brought it to the notice of the management of the stone crushing industry that their industry is causing dust pollution in the nearby village.
- 06 per cent of the respondents have replied that they brought the issue to the notice of the local press agents.
- 02 per cent of the respondents replied that they informed the news channel agents about the issue and the rest of them replied that they do not have any communication with the state level news channels.
- 21 per cent of the respondents replied that the pollution control board officials rarely visit the stone crushing industry but did not address the issues faced by the people in the surrounding areas.
- 100 per cent of the villagers replied that they are in fear to complaint to the police authorities because of various personal reasons.
- 59 per cent of the respondents replied that they are suffering from silicosis disease.
- 87 per cent of the respondents replied that they consulted the doctor for the cure of symptoms related to the silicosis disease.
- 32 per cent of the respondents own a small or medium land for the purpose of agriculture or horticulture purposes.
- 14 per cent of the farmers have the borewell facility.
- 100 per cent of the respondents replied that not even one NGO has visited to help them solve the issue.
- 89 per cent of the respondents replied that the walls of their house are cracking due to the blasting undertaken by the stone crushing industries in the nearby mountains.
- 100 per cent of the respondents replied that the Sakshi daily Telugu newspaper has covered the news about the issue on 19<sup>th</sup> July 2017 in the local edition of Anantapuramu district.
- 02 per cent of the respondents replied that the District Collector's office respond by visiting your village or Mandal to the articles published in the news paper about the issues faced by the people due to the stone crushing industries.
- 100 per cent of the respondents replied that the stone crushing industries haven't grown enough plants around the industry to control the pollution due to spread of dust in the nearby village.
- 100 per cent of the respondents replied that the stone crushing industries do not use water to wet the raw material in order to control the spreading of dust to the nearby village.
- There is a lack of additional staff to frequently inspect the stone crushing industries by the officials of the pollution control boards in the study area.

- The health of the people is at stake due to these stone crusher industries majority of the villagers are suffering from silicosis diseases in the study area. It is estimated that around fifty people die annually due to silicosis disease in the study area.
- The dust from the stone crusher industries is causing the death of the livestock belonging to the villagers and it is estimated that a loss of around Rs.50 lakhs due to it.
- The dust is affecting the nearby agricultural and horticultural crops as the dust is covering the leaves and cultivation lands thereby preventing the growth of plants.
- Due to blasting in the hills for the sake of raw material by the stone crushing industries is causing the damage to the houses like cracks in the walls, collapsing of walls from one side etc.it is also causing the blockade of the bore-wells laid for the purpose of irrigation and other activities.

#### ***Drawbacks and issues identified in the study area***

##### ***The following drawbacks have been identified in the study area***

- Lack of unity among the affected rural people to fight against the common issues collectively.
- Issues related to caste system still prevail in the study area and people are not willing to coordinate to draw the attention of the responsible authorities to the common problems they face.
- Illiteracy is one of the major reason for their backwardness.
- Heavy dependent on the primary sector is lowering their income.
- Lack of proper irrigation facilities in the study area is dragging them in the clutches of debt.
- Poverty due to traditional methods of cultivation is posing a threat to their development.
- Middle men are trying to exploit the villagers by acting as a mediators in between the bankers and the rural masses to avail the facility of loan to fulfil their emergency needs.
- The stone crusher industry employees are totally neglecting the ill effects of the dust that is causing a threat to the health of the farmers and crops.
- District Health Department is not intervening in the issue to suggest the concerned authorities to save the lives of the people.
- Pollution control boards are rarely inspecting the stone crushing industry units unless its major news is written in the news papers and in the news channels.
- District administration is not directing the officials to force the stone crushing industry to compulsorily implement the procedures prescribed for the operating of such industries.
- Blasting in the hills for the requirement of raw materials i.e., stone for the production of the construction purposes is another major cause for the cracks of the poor man's house and the walls of several houses are damaged and the people living in the old houses are under the constant fear that due to blasting in the hills for the stone material their hoses may fell and the families living in them may die at any moment.

- Political leaders are least bothered about the issue and are busy to retain power or asking the people to vote for them and after coming to power they will take steps to overcome the issue.

#### ***Suggestions***

##### ***The following suggestions have been offered to overcome the issues in the study area***

- The stone crushing industries should be inspected regularly and if it is found that they are not following the rules as prescribed by the state government then the licenses of such stone crushing industries should be suspended and re-allocation should be made after the authorities and the public in the concerned area are convinced.
- The affected people should be compensated by the concerned parties.
- District administration should interfere in the matter and thereby direct the concerned officials to take necessary action.
- Health administrative officials should organise free medical check-ups on Sundays to report the impact of the stone crusher industries on the people in the study area to identify that whether the rural people are suffering from silicosis disease.
- The officials in agriculture and horticulture department should visit the study area and suggest the necessary steps to be taken by the farmers dependent on the primary sector by organising seminars and conferences to protect their crops.
- The Panchayat Raj Institutions should interfere in order to protect the crops from dust and take steps to provide borewells to the farmers so that they use the sprinklers to spray the water and safeguard their crops from dust and pollution.
- The local and state level political leaders should highlight the issue and bring it to the notice of the State Government to make policies to overcome the issue permanently.
- The Non-Governmental organisations with the support of the affected people should make it a mass issue to bring it to the notice of the national and international organisations so that they take the initiative to protect these affected people from silicosis disease and provide financial aid to support them from the burden of loan due to crop failures because of the stone crushing industries in the study area.
- The stone crushing industries should be forced to mix the water to control the dust that is causing a severe problem to the health and crops of the poor farmers in the study area.
- The concerned departments should give the clearances to the stone crushing industry after duly cross checking the arrangements made by the industry to follow all the rules and regulations as per the requirement of the State and National governments in India.
- The political leaders should raise the issue in the State Assembly and in the Parliament and seek immediate response to control the pollution and save the lives of the people, livestock, crops, property etc.
- Free health camps and air pollution surveys to check the quality of air should be frequently organised in the study area.

- A separate national television channel should be started by the Government of India to cover the issues of pollution and environmental protection of all the states throughout the 24 (hours) x 7(days) so that action can be taken to control the pollution due to industrial and other sectors. This will also be helpful in meeting the targets of Kyoto protocol and Paris Climate Agreement.

## CONCLUSION

Development of the nation in the primary, secondary and tertiary sectors and environmental protection should be dealt with utmost concern. Green revolution, Industrial revolution and environmental protection should go hand in hand. The growth and development of the nation through establishing industries to achieve progress on par with other industrialised nations should not destroy the environment by polluting and causing the loss of life, crops, property and so on of the common man. The environmentalists have a great role to play in this era of industrialisation to focus and highlight the issues affecting the lives of the people especially in the remote areas. In India, the National Green Tribunal (NGT) is playing a significant role but its approach should not be confined to major environmental issues along with it the NGT's should reach the remote areas where the voice of the people is unheard. The protection of the environment is not only on the shoulders of the government but it is the responsibility of each and everyone of us living on this earth for a peaceful and sustainable development.

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