Information Gathering and Analysis Report

For

Coal Mining Safety Monitoring and Alerting System

Prepared By

Group 2

Group Members

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Types of information

Our goal is to solve coal mining safety issues and develop a monitoring and alerting system to improve the current system.

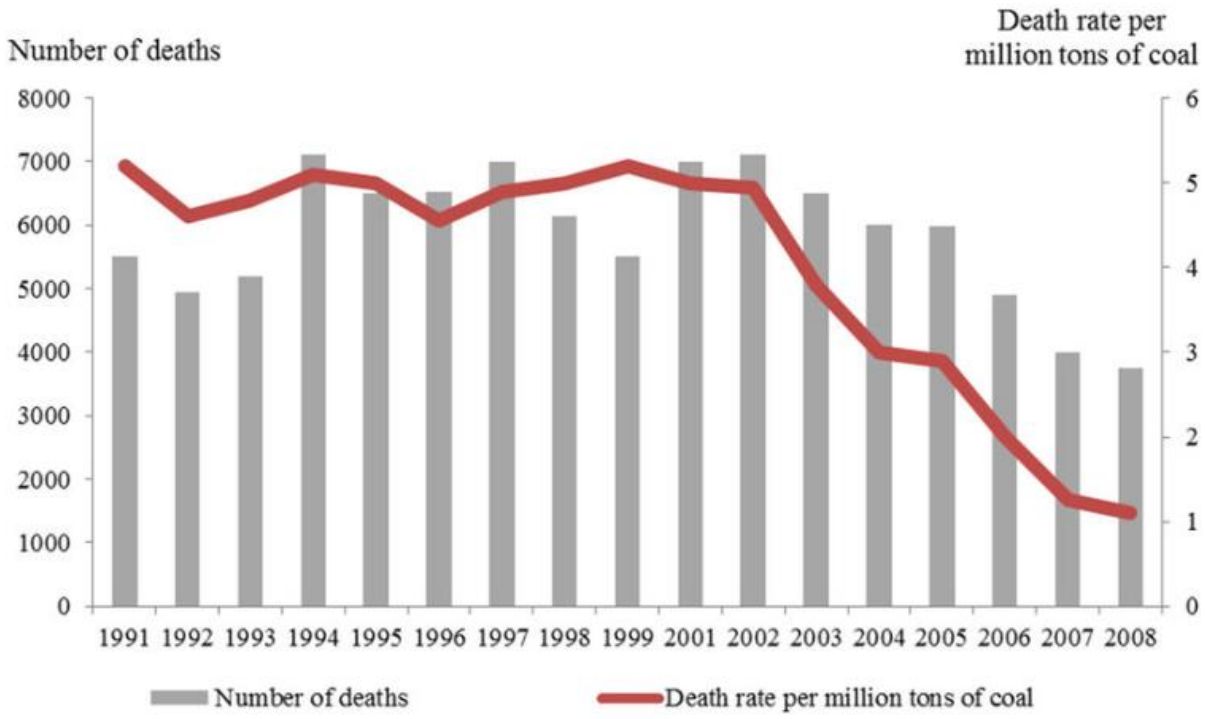
To achieve this goal, we must study and review the present system and collect as much information as possible.

The questions we should ask are as follows:

1. What type of accidents occur frequently in coal mining area?
2. What type of actions the authority take to prevent these accidents?
3. How is the environment of coal mining area? Is it harmful for workers?
4. What type of safety measures are implemented by authority currently?
5. How can we improve those safety measures and is it possible to introduce new safety measures?
6. How much effective is current coal mining safety system?
7. What is the statistics of the coal mining accidents or what is the death rate?

To answer these questions, we have reviewed the current literature to understand what types of research is going on in this field and what is the status of the current coal mining safety system. We have also interviewed students of PME (Petroleum and Mining Engineering) department. We have found that-

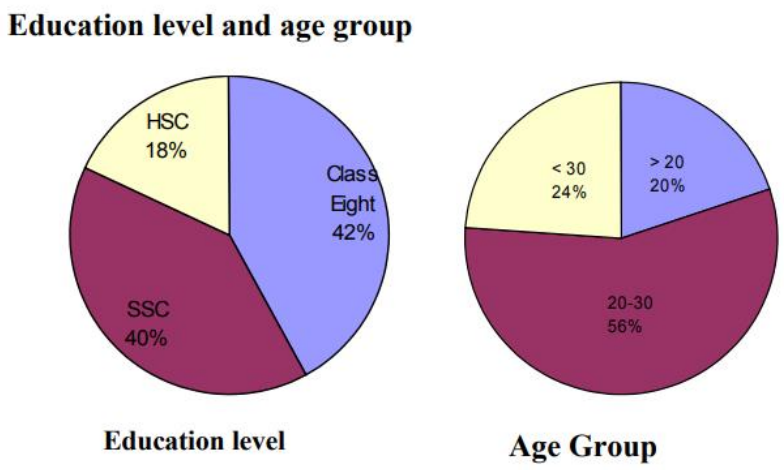
1. The current coal mining safety system does not use technological innovation. Rather it mostly relies on traditional measures such as raising awareness, providing training to the workers, monitoring by CCTV camera etc.
2. Few technological systems have recently been used such as monitoring gas concentration through sensors but these are not so effective to improve the overall safety.
3. The figure below shows a global statistics about the no of deaths in coal mining area against year and also death rate per million tons of coal. From this graph, we can deduce that the situation



has improved since year 2006 for taking certain measures but still the no of deaths per year is moderately high.

4. The pie charts above are showing the average literacy of the coal mine workers and their age group. Here we can see that

maximum workers are only class eight or SSC passed. So since they are young and not very well educated, they are not well aware of their health or safety issues. As a result, many severe accidents occur frequently in the coal mining area for the unawareness of the workers and for the hazardous environment.



5. We conclude that the current system doesn't use technology much and relies on traditional methods of raising awareness etc. So we have to propose candidate systems which can surpass current system and solve maximum safety problems.

Sources of Information

We have used following sources to gather our information about current system-

1. Scientific articles
2. Most recent research papers on this topic
3. People's answers to interview questions.

During interview, we have asked the questions to know what people think about current system and what type of system they want most.

Information Gathering Methods

We have used two types of information gathering tools-

1. Review of literature, procedures and forms
2. Interview

A literature review is a comprehensive summary of previous research on a topic, including comparative discussion as well as pros and cons which helps the analyst to provide an overview of what features exists and how they can be enhanced to meet present requirements.

Literature review is appropriate for our system because it provides us a detailed overview of present system and research direction on this topic.

In case of interview, we have interviewed the students of PME department since they have a good amount of knowledge about the coal mining industry. In this case, we have followed the unstructured method. In other words, we have allowed the participants to answer freely in their own words.

Outcome

After collecting all these information, we have realized that current system lacks implementation of technology. Recent technological innovations can solve many problems of coal mining safety by robustly monitoring the environment and providing alert while necessary. So we have shifted our attention to how technological innovations can be used in coal mining area. In this way, we have proposed our candidate systems.

Mapping of Information to Source

Information	Source	Methodology
Current system lacks implementation of technology	Interviewee	Unstructured interview
The death rate of coal mining area	Internet	Literature review
Average literacy of coal mining workers and their age group	Internet	Literature review
Few technological innovation have recently been used	Internet	Literature review