

## Safety Wearable for Miners

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### Abstract

**INTRODUCTION:** Mining is the process of extraction of valuable minerals, ores and other non-renewable resources from the Earth's surface. The mining industry is known for its hazardous and highly risky working environment.

**OBJECTIVES:** The mining industry is involved in the extraction of these geological materials, which is essential for the development of the country and its economy. However, this industry comes with its fair share of risks and dangers. Recent statistics show that around 100 miners fall victim to the harsh working conditions every year.

**METHODS:** Explosions due to Methane and coal dust followed by roof collapses, mine fires, gas outburst, blasting accidents, poisoning and suffocation are the major reasons out of these few of them causes deaths inside the mines.

**RESULTS:** Even though many precautions are suggested, and measures have been taken to improve the safety of the miners and to improve the work environment, but mines are still unpredictable, and accidents are also recorded then and there.

**CONCLUSION:** The existing safety technologies and measures have either failed to monitor multiple vital features that could lead to fatalities, or to provide adequate and appropriate rescue resources in time to help the miners in danger.

**Keywords:** Miners, Safety Measures, Sensors, Precautions, Internet of things

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### 1. Introduction

Mining is the extraction of valuable minerals, ores and other non-renewable resources from the Earth's surface. The mining industry is known for its hazardous and highly risky working environment. The mining industry is involved in the extraction of these geological materials, which is essential for the development of the country and its economy. India currently has 1,303 active mines and produces around 95 important minerals. As of 2020-21, India is the second largest coal mining industry in the world. The mining industry is known for its hazardous and highly risky working environment. Mines are always larger in size, and it starts to work with large number of workers in it. Providing safety and precautions for their workers becomes a major challenge for the employers. Working in mines is really a tough job, there may be sudden landslides, and hazardous gas exhausts which

leads to unfortunate accidents in the mines. Rescue operation is another important task to carry out as soon as the incident happened. Miners' safety is mandatory to achieve the goal of the employers and to support the nation in turn. Therefore, a system has to be adapted to identify and minimize the risk factors. However, this industry comes with its fair share of risks and dangers. Recent statistics show that around 100 miners fall victim to the harsh working conditions every year. Safety wearable was important for the workers in construction environment and a wearable safety device was used to assure safety environment for the people working in this environment [1]. Not only in mines, in Construction environment safety is mandate and it helps to improve the productivity in the society without creating the issues in the construction field and the importance of wearable devices based on the survey over 16 years and bibliometric data based analysed for individuals working in construction environment [2].The existing safety technologies and measures have either failed to monitor











