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WORK, ACCIDENTS AND ECONOMY IN THE MINING SECTOR COLOMBIA VS MEXICO

ACCIDENTES DE TRABAJO Y ECONOMÍA EN EL SECTOR MINERO COLOMBIA VS MÉXICO

Herminio Pabón Trujillo
Corporación Universitaria Minuto de Dios, Colombia

Diana Carolina Castilla Alvarez
Universidad de Pamplona, Colombia

Adriana Carolina Ramirez
Corporación Universitaria Minuto de Dios, Colombia

Teresa Isabel Peña
Corporación Universitaria Minuto de Dios, Colombia

Nelson Eduardo Rivera
Universidad de Pamplona, Colombia

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Work Accidents and Economy in the Mining Sector Colombia vs Mexico

Herminio Pabón Trujillo[1]
herminio.pabon.t@uniminuto.edu.co
https://orcid.org/0000-0001-5636-4813
Corporación Universitaria
Minuto de Dios Colombia- Cúcuta

Diana Carolina Castilla Álvarez
Diana.castilla2@unipamplona.edu.co
https://orcid.org/0009-0003-3463-2911
Universidad de Pamplona
Colombia -Cúcuta

Adriana Carolina Ramírez
adriana.ramirez-ga@uniminuto.edu.com
https://orcid.org/0009-0005-3027-6045
Corporación Universitaria
Minuto De Dios Colombiana - Cúcuta

Teresa Isabel Peña
tpenacorred@uniminuto.edu.co
https://orcid.org/0009-0004-3004-7819
Corporación Universitaria
Minuto De Dios Colombiana – Cúcuta

Nelson Eduardo Rivera
Nelson.rivera2@unipamplona.edu.co
https://orcid.org/0000-0002-1969-6824
Universidad de Pamplona
Colombia- Cúcuta

ABSTRACT

The mining industry in Colombia is one of the main aspects of wealth in the country, which focuses on the identification or discovery of mineral resources for use and exploitation, in addition the most extracted minerals are gold, silver emeralds, platinum, copper, nickel and coal, we also have at the level of Latin America the largest open-pit mine in the country, located in the guajira called the cerrejón, while in Mexico is the largest open sky mine and is located in Cananea Sonora called Buena Vista, where the main mineral of exploitation is copper there is also another very large and important mine for Mexico as is the charity mine that can produce various minerals such as copper, molybdenum, gold and silver. Objective Identify the causes of accidents in the mining industry in Mexico vs. Colombia in order to create strategies that help mitigate the threats to which they are exposed. Methodology A documented inquiry method was applied, which provided content published in thesis magazines, articles, repositories, with the idea of identifying the most frequent accidents in this sector, because these tasks have a high accident rate, with injuries that last several months and in the worst case, death Results showed that in the last ten years, Colombia continues to increase the accident rate by 9.57 per hundred workers, while in Mexico it has managed to reduce the accident rate in the mining sector by 75%, since 2010. to 2021.

***Keywords*:** accidents, mining sector, safety, dangers

[1] Autor principal
Correspondencia: herminio.pabon.t@uniminuto.edu.co

Accidentes de Trabajo y Economía en el Sector Minero Colombia vs México

RESUMEN

La industria minera en Colombia es una de las principales vertientes de riqueza del país, la cual se enfoca en la identificación o descubrimiento de recursos minerales para su uso y explotación, además los minerales más extraídos son oro, plata, esmeraldas, platino, cobre, níquel y carbón, también tenemos a nivel de Latinoamérica la mina a cielo abierto más grande del país, ubicada en la guajira llamada el cerrejón, mientras que en México está la mina a cielo abierto más grande y está ubicada en Cananea Sonora llamada Buena Vista, donde el principal mineral de explotación es el cobre también existe otra mina muy grande e importante para México como es la mina benéfica que puede producir diversos minerales como cobre, molibdeno, oro y plata. Objetivo Identificar las causas de los accidentes en la industria minera en México vs. Colombia con el fin de crear estrategias que ayuden a mitigar las amenazas a las que están expuestos. Metodología Se aplicó un método de indagación documentada, que aportó contenidos publicados en revistas de tesis, artículos, repositorios, con la idea de identificar los accidentes más frecuentes en este sector, debido a que estas tareas tienen un alto índice de accidentabilidad, con lesiones que duran varios meses y en el peor de los casos, la muerte. Los resultados arrojaron que en los últimos diez años Colombia sigue incrementando la tasa de accidentabilidad en un 9,57 por cada cien trabajadores, mientras que en México ha logrado reducir la accidentabilidad en el sector minero en un 75%, desde 2010. 2021.

***Palabras clave*:** accidentes, sector minero, seguridad, peligros

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INTRODUCTION

It is estimated that the mining sector in Colombia, as an increasingly growing activity in the raw materials industry, both open pit and underground, has been having a strong impact on Work accidents, according to the World Labor Organization (ILO), “although considerable.” “Attention is deployed in Colombia.” , the rate of deaths, injuries and illnesses recorded among mining workers in recent years remains high, and the mining occupation is the most dangerous, while Mexico analyzes the mining sector as one of the jobs with the greatest exposure to any type of risk and accidents For this reason, industrial safety has been strengthened to offer a safe work environment, since one of the reasons for maintaining the low accident rate in recent years is the audit, supervision and creation of strategies, the mining sector continues to monitor constantly to maintain security facilities and operations to continue reducing work accidents, they also have the appropriate individual safety equipment for workers, and thus improve quality and safety standards.

Colombia has a high accident rate of 1,262 employees with an average of 103 deaths each year in Antioquia, Norte de Santander, Caldas, Cundinamarca and Boyacá, governed by the Ministry of Labor, they are being more exhaustive in inspections, surveillance and control. as well as areas with a higher accident rate, on the other hand, the Ministry of Economy (SE) of Mexico says that in the last ten years 170 workers have died and 108 have suffered injuries in mining work, departments such as Guanajuato, Querétaro, Durango, Chihuahua, Coahuila, Zacatecas, San Luis Potosí, are part of the Sonora plant with an accident rate.

Background

Hernández and Valencia, (2022) carry out research for a thesis with the title of “Effective management of locative risks in the mining industry of Marmato Caldas” with the objective of designing strategies to minimize locative risks in the mining sector, because In 2019, 92% were due to accidents in underground mines and 5% in open pit mines, where 2,943 workers were involved in accidents and occupational diseases from 2015 to 2019, It can also be observed that in 2019 the fatality mining was 1.5 percent and in 2020 it had an increase rate of 2.63 percent.

Bottura A. (2020) shows the importance of introducing technology and support equipment to reduce accidents in the underground mining sector, so guaranteeing the protection of Mexican mining workers

should be considered one of the most important objectives of the country, since 60% of accidents are related to eminent dangers such as landslides and falling rocks, poor visibility, mechanical cutting and drilling, electric arc, fire and explosion, demonstrating that 85% of workplace accidents are serious.

Calambas C. (2021) carries out a thesis with the title of “Behavior-Based Safety Management in the Occurrence of Workplace Accidents in Underground Mining at the Quintana SAS Company” with the purpose of designing strategies that help reduce workplace accidents, of this company because there has been a high prevalence of accidents due to lack of training for personnel on the execution of tasks for which they have been hired, every worker who joins a company must have a minimum induction of eight hours as well Colombian regulations indicate this, as results were obtained that the company Quintana S.A.S. They must make employees aware of the risks to which they are exposed in their work area, as well as strengthen compliance with safe practices and self-care.

Fulze, L. (2021). carries out an investigation whose name is "Overconfidence causes the majority of eventualities in the mining sector" with the purpose of building a control system and engineering measures properly developed in the workplace, because the mining sector is one of the functions considered the most dangerous, it is important that in the phases prior to the implementation of the management system not only engineers and experts participate, it is recommended that all company managers participate, if the contribution of the administrative part is active and committed, the success of the program and the financial investments made by the company are guaranteed, many of the projects fail due to the lack of real acceptance as well as the position of the organization before, during and after the implementation of the plan.

Moncada L (2023) prepares a study on the main causes of accidents in underground coke mines, the objective of knowing what causes accidents in the mining sector, since the majority of accidents occur in workers between 18 and 25 years old who They do not have experience in carrying out the activities and even less know how to assess the danger to which they are exposed, It is said that one of the main reasons is the lack of real instructions when starting the activity, but also other reasons, such as geomechanical failures, in which 33.1% of atmospheric fluctuations represent 19% and the main cause is an explosion, with 13.2 being a probability factor for a major accident.

According to previous studies, it is possible to collect information from people, magazines, articles and documents where they have carried out research on the mining sector of Colombia vs Mexico, In this documentary review we were able to demonstrate the importance of the management system in these companies, because A comparison of the accident rate was carried out between these two countries where Colombia stands out with the highest prevalence of accidents in this sector due to the need for rigorous implementation of the management system, risk assessment, violation of safety procedures as well as training on the dangers that are exposed in the work area, while in Mexico today the mining industry has managed to make safety one of its most important values and policies, promoting a sustainable culture of prevention and significantly reducing accidents, in addition By 2022 the accident rate was 0.90 percent per 100 employees.

METHODOLOGY

A documented inquiry method was applied, which provided content published in thesis journals, articles, repositories, with the idea of identifying the most frequent accidents in this sector, because these tasks have a high accident rate, with injuries that last several months and in the worst case, the death.

RESULTS AND DISCUSSION

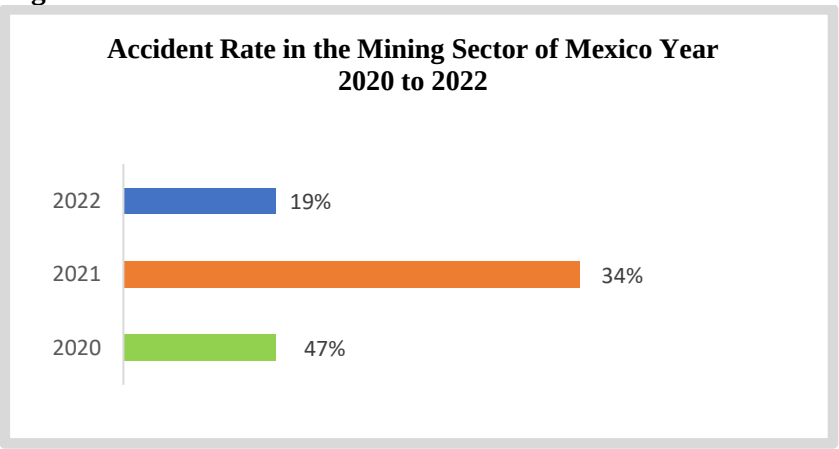
For this study, a bibliographic search was carried out through online portals; Among the materials, for example, it was based on data from the mining committee, articles, the mining chamber of Mexico (Camimex), archives or university repositories where accidents are investigated in the Colombian mining industry as well as in Mexico, it should be noted that According to the world organization of labor (ILO), the relevant common causes of occupational accidents in this sector are explosions, chemical substances, noise, vibrations, heat, humidity, overexertion, reduced environment, inadequate utensils, collapses and rockfalls, it is worth pointing out that merchants and mining workers are unaware of the health consequences of improper use of personal protective equipment, but it must be understood that these do not eliminate the problem, but they do reduce the probability of contracting an occupational disease.

Likewise, with the investigation, it is possible to demonstrate the working conditions in the underground mines of Mexico that have a great difference from Colombia, because in this country they invest in

work hygiene seeking comfort and tranquility, which has as a response the reduction of the index, accident rate for collaborators, creating prevention strategies and innovation of processes and training. In the same way, they make a selection of ideal personnel for the position to work, they also implement a mining shelter that is installed in the highest part of the mine that has with air conditioning, oxygen cylinders, measuring equipment, radio communicated to the surface, food, hydration, and bathroom, these companies in Mexico have been characterized as leaders in generating secure employment, since by 2022 the mining chamber of Mexico (Camimex) silver helmet award to companies with best safe practices and lowest accident rate in the mining sector who ensure they continue investing in occupational safety and hygiene to reach zero accidents.

Although Colombia has stood out as a country with the highest number of accidents in the mining sector, due to safety conditions, little investment in the management system, non-compliance with standards, lack of regulations, one of the biggest failures of the safety system. . , the current policy is the lack of a work plan that facilitates the supervision of planned actions and also shows the number of accidents in the industry, which is part of the initiatives promoted by the Ministry of Labor, strengthening control, monitoring and supervision, visiting the sectors with the highest number of accidents, especially in departments such as Norte de Santander, Antioquia, Boyacá, Caldas and Cundinamarca. , dedicated to the mining industry, guaranteeing compliance with labor standards and mitigating accidents, we also continue to promote a safe work environment and promote promotion and prevention instruction aimed at improving the quality of life where workers are trained in management and hazard recognition.

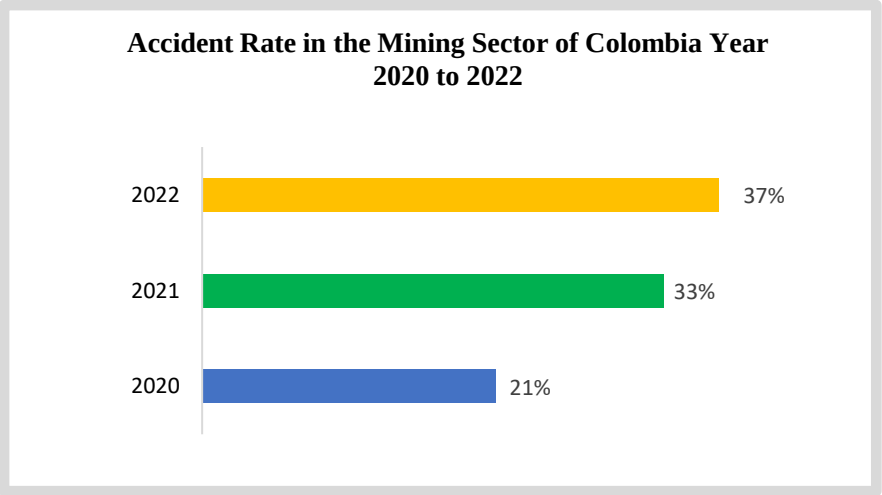
Figure 1



Ramirez A. (2024) Collaborative work Coil.

In the mining industry in Mexico in the last three years statistics show that the accident rate has been reduced by up to 64% for the year 2020, the accident rate was 11% of workers while in 2021 there was an increase of 15% by 2022 there is a 10% decrease in accidents so far this year.

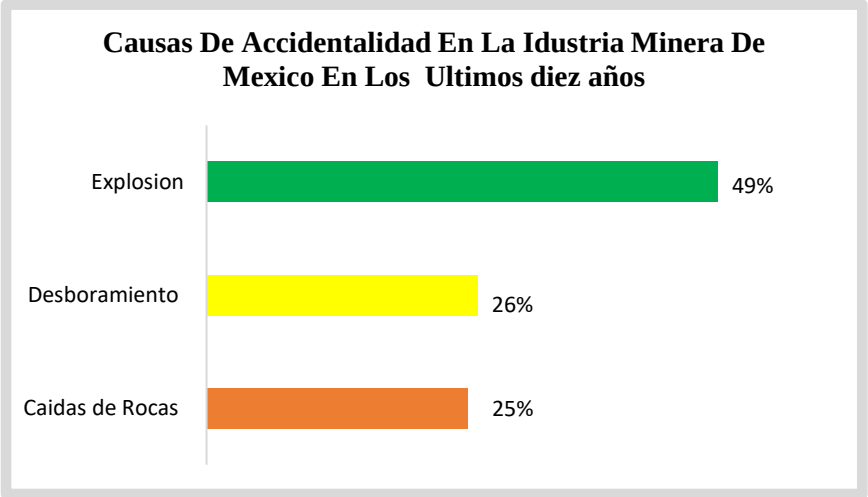
Figure 2



Ramirez A. (2024) Collaborative work Coil.

It is possible to analyze in the statistics that Colombia in the mining industry sector in the last year has been increasing worryingly compared to previous years, as can be seen in the graph in 2020 the accident rate was 21% followed by 2021 with 33% and ending the year 2022 with an index of 37%.

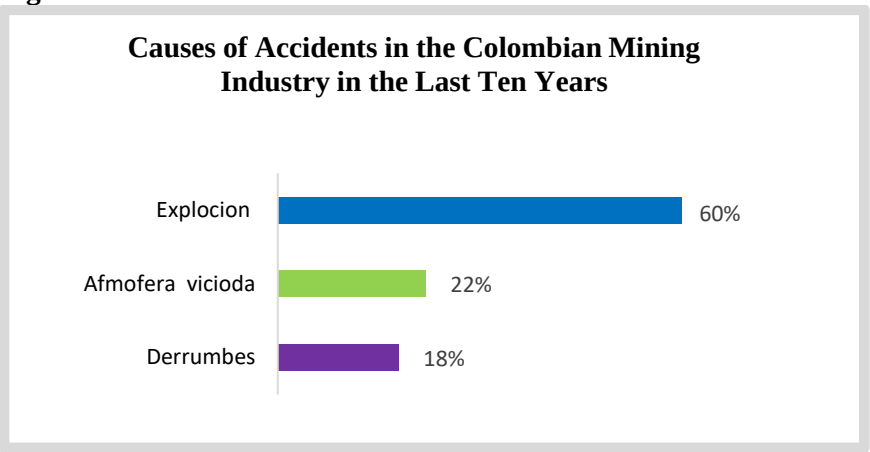
Figure 3



Ramirez A. (2024) Collaborative work Coil.

There are many causes that cause accidents in the mining area in Mexico, some of them minor that lead to disabilities and others such as death, we found that one of the main sources of accidents are explosions with 49% compared to 26% of landslides and 25% of rockfalls.

Figure 4



Ramirez A. (2024) Collaborative work Coil.

In the graph we were able to show that in Colombia one of the main factors of accidents are explosions with a record of 60% along with the vitiated atmosphere with 22% followed by collapses with 18%.

CONCLUSIONS

It is possible to conclude from the study of the Colombian mining industry that it still needs to strengthen safety and hygiene at work, due to the high accident rate, as well as put into operation individual safety equipment, formation or training on the use and manipulation of work tools Similarly, on the other hand, the country of Mexico shows us that they constantly work on the continuous improvement of occupational health to also guarantee the well-being and safety at work of their collaborators.

The comparison between these countries in occupational safety and hygiene shows the great difference that Mexico has more efficient occupational safety and where they make the necessary investments to reduce accidents and provide the best guarantees of safe work, while Colombia continues to work on it, but even so it continues to be one of the countries with the highest number of accidents.

Finally, with this research on the mining sector of these countries we were able to see the discrepancy that exists in managing safety, health and hygiene at work properly, the benefits that come with making the necessary investments for this work area that is among one of the increasingly dangerous jobs, and there is also a reduction in job insolvency, professional absenteeism and its greatest effect, accidents.

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