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**Intellectual Output 1**



**HEALTH & SAFETY AT WORKPLACE:**

**DANGEROUS JOBS**

**INTRODUCTION**

From this unit you will learn: about the most dangerous jobs in the world, which engineering placements are most challenging and the story of the famous construction site photo.

**DISCUSSION QUESTIONS**

What are the most dangerous jobs in the world? What are the occupational hazards of engineering jobs?

**TEACHER’S INPUT**

Read the text to check your answers.

[Top 10 Most Dangerous Jobs of 2021 | EHS Today](https://www.ehstoday.com/safety/media-gallery/21154744/top-10-most-dangerous-jobs-of-2021)

A look at **the most dangerous occupations in the U.S. (pre-COVID)**, as measured by fatal work injury rate.

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If you’re wondering if this list of the United States’ “most dangerous jobs” includes occupations directly affected by COVID-19, the answer is no, it does not. This list is based on workplace fatality data compiled by the U.S. Bureau of Labor Statistics (BLS), and their data lags the current year by two years. Since the most current stats reflect workplace data from 2019, the impact of COVID-19 is not reflected at all in these numbers. We’ll have to wait another year to see exactly which jobs ended up being the most dangerous during the pandemic.

Keeping that disclaimer in mind, this “most dangerous jobs” ranking is based on fatal work injury rate, which is calculated per 100,000 full-time equivalent workers. While the BLS also tracks total number of workplace deaths (as in previous years, truck drivers had the most fatalities—according to BLS, drivers account for nearly 20% of all fatal work injuries), the fatal work injury rate focuses on the relative danger inherent in a job. Since there are far more truck drivers employed than many of the other occupations on the list, the Top 10 list offers a closer look at exactly how often a worker dies while employed in a specific industry.

In comparing the current list to the previous one, there was some shifting among the rankings, although the same 10 occupations remained on the list. The top two switched positions (a similar switch occurred the previous year), and the biggest change within the list was construction workers moving up from 9 to 5. In fact, fatalities within the construction industry overall were up 5% from the previous year. Farmers and ranchers, meanwhile, dropped a couple spots on the list. No other occupations moved move than a single slot either up or down.

Tellingly, 2019 was not a very safe year when you consider that the total number of deaths on the job (5,333) was the most since 2007. According to BLS calculations, “A worker died every 99 minutes from a work-related injury in 2019.” Also, workplace deaths due to suicides and unintentional overdoses were up slightly in 2019.

### The most dangerous jobs:

### 10. Grounds Maintenance Workers

### 9. Farmers, Ranchers and Other Agricultural Workers

### 8. Structural Iron and Steel Workers

### 7. Drivers/Sales Workers and Truck Drivers

### 6. Refuse and Recyclable Material Collectors

### 5. Helpers, Construction Trades

### 4. Roofers

### 3. Aircraft Pilots and Flight Engineers

### 2. Logging Workers

### 1. Fishing and Hunting Workers

**READING**

If you asked a passer-by to describe an engineering job, the most common adjectives would be: *rewarding, useful,* and *well-paying*. Not many would say *dangerous*, although engineers do face hazards which may lead to serious injuries while in their office, on work sites and conducting their research and design duties. Obviously, law enforcement or firefighting are far more risky profession but still in many cases it is not a safe nine-to-five white-collar job. Still, even engineers who rarely leave their offices can suffer repetitive motion injuries, such as carpel tunnel syndrome, tennis elbow, and shoulder, back, and spine injuries after long hours spent in front of their computers. Another obvious truth - most engineers drive between their office and construction sites or factories to conduct testing and handle problems. This increases their risk of being injured or killed in a car accident caused by a negligent driver while in transit or at their destination. The most common accidents are slip and fall which can happen for a multitude of reasons, e.g. when parking lots are not maintained, flooring is cracked, ripped, or torn, and spills and debris are not cleaned up.

Engineers who spend much of their time in labs are exposed to toxic, flammable, and otherwise hazardous chemicals and materials which can explode or cause a fire. They can frequently suffer from chemical burns. Moreover, the long-term exposure to toxic substances may lead to the development of cancer or a respiratory illness.

Occupational hazards of construction or automotive engineers include being struck by heavy objects or caught in machinery, when working around heavy equipment, tools and materials. There is also in risk of being hit by heavy objects, especially threatening if you’re also working from a height. Falling from heights alone may result in catastrophic consequences, like traumatic brain injury, spinal and back injuries, paralysis, and death if you fall with no fall protection provided. This is the main peril for engineers dealing with wind turbines or telecoms towers. One wrong move or lapse of judgement and focus could see you plummet from heights of over 40 m to the ground. Also aerospace and marine engineers are in jeopardy when working on aeroplanes and ships.

The most common injuries of electrical engineers include electrical shocks, electrocution, and electrical burns as they work at high-risk, high-voltage sites. In addition, such sites are often near busy roads or in isolated, natural settings. Mining engineers must solve complex engineering problems that arise in the mine ensuring its smooth and safe running. While, a tunnel engineering job involves working in confined environments for long periods of time with the risk of something falling on you.

If you look for the constant adrenaline rush at work, there is one job which will definitely take you out of your comfort zone. It requires high concentration skills and calmness under pressure physical stamina and fitness, superior reaction times, resourcefulness and adaptability combined with following strict safety procedures under any circumstance. Let’s add excellent night vision and dexterity, ability to withstand extreme cold and heat conditions, excellent swimming ability and diving proficiency. What’s the job? The oil rig engineer or/and the offshore diver. Obviously, most of the work is covered by robots called ROVs (Remotely Operated Vehicles) controlled from the comfort of the rig command centre. But if something goes wrong, you’ll be harnessed onto an oil well holding liquids at pressures of over 10,000psi. In layman’s terms, one wrong move and it can tear through the pipe casing and your scuba equipment like butter…

[The Most Dangerous Engineering Jobs - GineersNow](https://gineersnow.com/uncategorized/the-most-dangerous-engineering-jobs)

**Mining engineer**

When they do their job, they are not only six feet below the ground but could be a thousand more! Mining engineers need to meet the global demands for mineral commodities. They extract oil, gas, minerals, and metals for manufacturing purposes by designing underground mines and working in underground operations. These engineers are facing huge massacre threat for they deal with explosive materials, dangerous gas and collapses.

**Chemical engineer**

These engineers need to have a great sense of ‘chemistry’ with the different type of chemicals they handle to secure their safety. They deal with the conception and design of valuable materials which are often essential to fields such as nanotechnology, fuel cells, and biomedical engineering. When handled without care, these highly-flammable chemicals can result in explosion.

**Aerospace engineer**

To become one of the engineers of an aircraft going to a special mission in outer space comes great power. But like what Superman said, this is partnered with great responsibility. Aerospace engineers design, test and supervise the manufacture of aircraft, spacecraft, and missiles. They also supervise ongoing space productions. Amazing, isn’t it? But if you dare to become one, you will face a lot of risks in the aviation industry such as excessive noise and dangerous materials.

**Petroleum engineer**

Every vehicle won’t work if not because of these engineers. They design methods of oil and gas extraction and work with geologists, drilling operators and the best possible equipment to be able to capture petroleum. While a lucrative profession, the job is challenging as engineers are involved in easily difficult situations.

**Marine Engineer**

Marine engineers are involved in the design and construction of seagoing vessels and structures. The constructions, operations and maintenance of the engine room are the main obligation of marine engineer. The risk of human error is an ever-present danger in a working environment of a marine engineer, often resulting in personal injury, disability or tragic loss of life.

**VOCABULARY PRACTICE**

Complete the sentences with the words given below (there are 5 extra):

**COMMODITIES, TURBINE, FLAMMABLE, MISTAKE, CAUTION, AVIATION, THREAT, SCAFFOLDING, CRANE, ENGINE, DRILLING, ERROR, RIG, MINE, VESSELS, CAREFUL, THREATEN**

1. Among engineering jobs that can kill you there are : wind turbine technician and telecoms tower climber.
2. A so-called “human error” is number one factor in the accidents statistics.
3. In Asian countries the most popular material for construction scaffolding is bamboo.
4. Being a diver at the oil rig platform is a really lucrative job, yet highly risky.
5. Marine engineers design and construct various seagoing vessels. While on board they also maintain the engine room.
6. The mining industry needs to meet the demand for mineral commodities.
7. You need to handle chemicals with utmost caution to secure your safety.
8. Excessive noise is a common risk in the aviation industry.
9. Explosive and flammable materials pose a massive threat to the people and infrastructure around.
10. Petroleum engineers must closely co-operate with geologists and drilling operators.

**FURTHER PRACTICE**

Do you recall the famous black and white photograph called “*Lunch Atop a Skyscraper*”? It is the image of workers sitting on a crane beam, their legs dangling 800 feet above the New York City at the construction site of RCA Building (now GE Building). The TIME magazine included this photo in the list of “The Most Influential Images of All Time”. Do you know when the picture was taken, who the workers are?

Watch the video <http://youtube.com/watch?v=7QCYDzsQ_yM>

Answer the questions below.

1. How many workers are there in the picture ?

**11**

1. What can you see beneath their feet ?

**Central Park and other buildings (of Manhattan Midtown)**

1. What nationality are they ?

**Irishmen, Mohawk Indians and a mixed bag of people**

1. Do you know any names of the workers ?

 **NO**

1. Which paper published this photo first ? When ?

***New York Herald Tribune* on October 2nd 1932**

1. What was the reson to publish such an image ?

**for publicity, to support the positive attitude towards the future, America and business**

1. Who were Joseph McCluskey ,William Leftwich Charles C. Ebbets and Thomas Kelley ?

**Joseph McCluskey – a man holding a flag up so it seems to be attached to the top of the Empire State Building ; the others – photographers (NB : we don’t know which one took the photo !)**

1. Why was the photographers’ job equally dangerous ?

**climbing the cranes, carrying on their backs leather containers with the glass plates to take photos**

1. What is the name of this period in the US history ?

**The Great Depression**

1. What name of a famous entrepreneur is mentioned in the video ?

**Rockefeller (the workers are on the construction site of what is now called the Rockefeller Center)**

**VOCABULARY**

**Explain the highlighted expression in the sentences below.**

1. *They're the unsung heroes of construction. -* ones who do great deeds but receive little or no recognition for them.
2. *The men are sitting on a beam about 800 feet above the city of New York. -* The **foot** (pl **feet**) is the Imperial and US customary **unit** for measuring length (abbreviation "ft" (or "ft."), or by a prime symbol ( ′ ). One **foot** contains 12 inches. This is equal to 30.48 centimetres in the metric system.

**So how high are the men sitting above the ground (in the metric system)? 800 feet = 24,3 m**

1. *Rockefeller employed people in quarries.-* places, typically large, deep pits, from which stone or other materials are or have been extracted.
2. *You’ll have stunts like Joseph McCluskey holding a flag up that seems to be attached to the top of the Empire State Building.-* unusual or difficult feats requiring great skill or daring especially performed or undertaken chiefly to gain attention or publicity.
3. *The “hats off” picture shows them looking at the camera. They're so proud of themselves.-* An expression used to express admiration or congratulations.
4. *There's a real sense of pride and accomplishment. –* a successful achievement
5. *The photographers had to have a death wish.-* an unconscious desire for one's own death.
6. *They're not recognized but in a way they are immortalized in this picture. –* commemmorated, endowed with enduring fame

*They're the unknown workers. They're the unsung heroes of construction. If you see the picture once, you never forget it. This photograph which is known around the world shows 11 men sitting on a beam about 800 feet above the city of New York. You can see Central Park in the background, see buildings below. They're all construction workers, and they came from all over the world. There are Irishmen, there are Mohawk Indians. It's a mixed bag of people, and they're all working in 1931-32. The image first appeared in the The Herald Tribune. It was a major New York publication that generated an enormous amount of excitement about what was going on. Rockefeller put 250,000 people's work in the middle of the Depression. There were truckers, people in quarries, people making windows, different kinds of people, but it really had a serious effect on the economy. That was the attitude very positive towards the future, America and business. The funniest part about the photographs were they were done for publicity. So you'll have stunts like this : Joseph McCluskey holding a flag up that seems to be attached to the top of the Empire State Building. The other pictures also show men riding the final block of stone up going to celebrate putting the last stone in place. We do have a photograph taken the same day and - what I call the “hats off” picture shows them looking at the camera. They're so proud of themselves. You know there's a real sense of pride and accomplishment. I think that's also what all the pictures show - the pride the guys had in their work. There are a couple of photographers who were present that day William Leftwich Charles C. Ebbets and Thomas Kelley, who had to have a death wish.*

*They would have on their back a leather container that contained the glass plates, and they would actually switch them out. The question of the names of all these men comes up frequently but most of them are either good guesses or plain guesses. They're not recognized but in a way they are immortalized in this picture.*