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# Development and Improvement of The Methods of Increase Labor Safety of Oil and Gas Network Employees on The Basis of Using The Method of Registration of Dangerous Situations

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**Abstract**
Safe and harmless working conditions include: appropriate technology, work procedures, use of production tools, comfortable working conditions, raw materials, semi-finished products, organization of workplaces and rational use of equipment, chemicals, meeting safety requirements, selection according to profession implementation and training of workers, including safety devices in technical and regulatory documents. In the design, organization and implementation of technological processes, safety requirements must be provided in advance based on the application of the method of registration of dangerous situations, many proposals have been made for the development and improvement of methods of increasing the labor safety of the employees of the oil and gas network. Workers in the oil and gas extraction industry remain one of the employees with the highest risk of injury and death at work compared to all other sectors in the Republic of Uzbekistan. The latest data from the State Statistics Committee (2022) showed that 86 of the workplace deaths in the mining, oil and gas extraction industry occurred within oil and gas activities.Due to the high cost of drilling projects, time away from home, long work days and high physical demands, the constant pressure to be productive takes a toll on workers. These factors can ultimately affect worker safety, leading to increased human error, including misuse of equipment, which is a major factor that can increase the likelihood of accidents.

**Keywords**: Drilling, safety, three-level control, operational management, manager, motor vehicle, visual communication

## Introduction

Safe and harmless working conditions include: appropriate technology, work procedures, use of production tools, comfortable working conditions, raw materials, semi-finished products, organization of workplaces and rational use of equipment, chemicals, meeting safety requirements, selection according to profession implementation and training of workers, including safety devices in technical and regulatory documents. In the design, organization and implementation of technological processes, safety requirements must be provided in advance. For this, prevention of harmful effects in production, change of operations and processes at work, automation of production and use of remote control in it, attention to hypodynamics, rational organization of work, as well as limitation of hard work should also be taken into account. Also, it is necessary to provide information on production safety, process management and control system, timely disposal of waste, sources of danger and harm. Work rooms must

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comply with construction standards and regulations (QM and Q), the level of dangerous and harmful effects in rooms and workplaces must be higher than the normative indicators. It is necessary to meet the requirements of QM and Q and the rules approved by the state control organizations. Production equipment must comply with GOST 12.2,003-74, QM and Q and technological design standards, and workplaces must be adequately lit.

**Figure 1.**

Workers in the oil and gas extraction industry remain one of the employees with the highest risk of injury and death at work compared to all other sectors in the Republic of Uzbekistan. The latest data from the State Statistics Committee (2022) showed that 86 of the workplace deaths in the mining, oil and gas extraction industry occurred within oil and gas activities.

Due to the high cost of drilling projects, time away from home, long work days and high physical demands, the constant pressure to be productive takes a toll on workers. These factors can ultimately affect worker safety, leading to increased human error, including misuse of equipment, which is a major factor that can increase the likelihood of accidents.

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**Figure 2.**

**Material and methods**

Improving Safety for Oil and Gas Workers This reinforces the importance of reevaluating safety programs and behaviors to more effectively address worker safety issues and reduce injury and accident rates in the industry. Use these tips to improve worker safety on your next project:

1. Collaborate with local communities on emergency response

Develop relationships with local emergency response organizations and establish a consistent communication flow to ensure a high level of overall safety. Emergency responders, rig hands, and search company safety and health professionals must work together to leverage their resources to be ready to respond quickly and successfully to emergencies. Discuss the specific health and safety hazards that exist on the drilling site and determine how to help each other in these emergencies. If possible, take emergency personnel around the rig or rig to give them a better idea of how to approach potential emergencies.

2. Develop a safety program for worker safety.

Organization of labor protection and technical safety training for workers. Stimulation of an environment of open communication and respect. Take a personal approach to safety training and allow time for workers to get to know each other. Building stronger personal relationships with colleagues builds trust and camaraderie while in the field to improve overall safety.

3. Active control of mental health of workers.

A big factor that negatively affects safety in industry is the work culture. By promoting a transparent and open environment through various training methods and team exercises, eliminate the old "tough guy" appearance and stereotype commonly associated with industrial workers. Building a sense of community and trust in workers makes it easier for them to ask for help, obey rules, admit mistakes,

Insist that procedures and hazards are fully communicated to new employees in the event of shift transfers and job changes.

4. Constantly monitor the workability of the workplace.

Reduce the chance of fatal accidents by keeping buildings, roads and all work areas clear of debris to prevent trips, falls and hazards. Install clear signs that direct workers to emergency and safety equipment to quickly respond to hazards. For example: equipping all problem areas with spill kits in the event of a chemical or oil spill.

5. The three-level control of labor protection is an effective method of continuous safety control and quick response to deviations from the norm. At the same time, management functions are divided into 3 levels:

Work managers - foremen, foremen, department heads

- Responsible for level 1 tasks. This is operational management.
- Execution of 2nd level tasks is organized by department heads - heads, managers, heads of workshops, productions, departments. This is control at the level of middle managers.
- Level 3 assignments are supervised by the OT commission headed by the head of the enterprise (organization). This is a management level control.

6. Installation of vehicle monitoring system.

Oil and Gas Driving accidents account for the largest number of total fatalities in the oil and gas industry. Monitor driver behavior to analyze problems and bad habits and determine how to improve vehicle safety programs and employee training.

7. Provide clear visual communication.

Strive to eliminate miscommunication and confusion with clear and reliable signs and labels to convey hazard and safety instructions. Create special signs to communicate procedures specific to specific work crews and jobs. Replace outdated, illegible and outdated signs as soon as possible. Check for signs of faded flooring that needs to be reapplied.

8. Revision of security features as projects change.

When jobs, projects and crews change, take time to assess that signs and labels are in the right places and communicate existing hazards and procedures before the next project begins; it ensures risks and details about specific locations are known when new workers arrive.

9. Current and technical maintenance of machines.

When you work on machines and devices, machines are your lifeline. Prevent premature machine breakdowns and keep your workers safe by performing regular machine maintenance checks. Remind your workers of the importance of routine maintenance inspections using oil and gas well drilling and maintenance activities.

Pipe and rod in underground and capital repair of wells elevators are used: pipe and bar switches. When carrying out underground and capital repair works in the well, to facilitate the work of the workers, the pipelines, y ovarious trays are used for transporting loudspeakers.

The most complicated work in wells is capital repair. Con under the circumstances, the capital repair brigade entered the bottom of the well removes water or foreign water. Such works are called repair and installation works. Pressure in the well to seal the water that has entered the well with a cement mixture is driven. The flow of gas causes it to go up through the annular space between the connection of the use and technical pipes, the uncontrollable gas flow to the unproductive (horizon) layer increases, and the critical pressure appears on the well.

**Table 1. Parameters of high pressure pumps.**

| Parameters | N S-320 | Three plungers | N B 80 |
|---|---|---|---|
| Power consumption kW | 108 | 135 | 63 |
| Limit driving pressure.MPa | 40 | 50 | 20 |
| The most transmission | 26 | 23 | 10.8 |

**Conclusions and suggestions**

Oil and gas employers should also have a worker's compensation policy. This ensures that any employees who are injured while on the job will be provided with the necessary medical care and other benefits. Employers should keep records of all employee injuries and illnesses and ensure that their workers' compensation policies cover all potential risks associated with their job. If you happen to get injured while working in an oil field, oil field accident lawyers can help you fight for the compensation you deserve. You should never have to pay out of pocket for medical expenses resulting from an on-the-job injury Risk management is essential in any industry, especially one as dangerous as oil and gas. Employers should have risk management plans in place that are tailored to their unique operations, so they can ensure their employees' safety at all times. This includes identifying potential hazards and having plans in place to address them.

Risk management plans should also include safety drills that employees can practice regularly, so they know how to react appropriately to an emergency. Additionally, employers should provide their workers with a safe work environment and regular training on safety procedures. Oil fields have numerous hazards that can put workers at risk of severe injury or even death. However, there are measures that employers can take to help keep their employees safe and minimize risks. With these tips, employers can ensure their workers have a safe work environment and know how to protect themselves.

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