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A COMPREHENSIVE APPROACH TO OCCUPATIONAL SAFETY AND HEALTH AND INDUSTRIAL SECURITY

In the modern mining industry, ensuring occupational safety and health (OSH) and industrial security is one of the key tasks for companies. Ensuring employee safety not only prevents accidents and incidents but also contributes to increased productivity and reduced costs associated with equipment failures and downtime. This article examines the innovative approaches employed by Solidcore Resources to improve OSH and industrial security at its sites, including the implementation of a local personnel positioning system, an anti-sleep system for dump truck drivers, and the electronic issuance of work orders for employees.

1. Local personnel positioning and employee health monitoring system.

One of the promising approaches to enhancing workplace safety is the use of a local personnel positioning system combined with employee health monitoring. Since 2022, JSC «Varvarinskoye» has implemented a system that allows real-time tracking of employees' locations and monitoring their physical condition based on data collected from wearable devices. The system consists of several key components: wearable devices (such as bracelets, helmet sensors, and so-called «GPS tags»), a wireless communication infrastructure between the tag and the anchor (receiving device), and software for data analysis. The wearable devices are equipped with sensors that collect biometric data (such as heart rate and body temperature). This data is transmitted to the system, where it is analyzed to determine the employee's location and detect any signs of health deterioration.

2. Anti-Sleep System for Dump Truck Drivers at «Komarovskoye Mining Enterprise» LLP.

Driving mining vehicles requires heightened attention and quick reaction times from dump truck drivers. Driver fatigue and drowsiness are among the main risk factors for accidents. To prevent such situations, the Company has implemented an «anti-sleep» system designed to monitor drivers' conditions and prevent cases of falling asleep at the wheel.

The «anti-sleep» system is based on the use of surveillance cameras, motion sensors, and algorithms for facial and behavior recognition of the driver. Cameras installed in the cabins of the dump trucks monitor the driver's condition, detecting signs of fatigue or drowsiness (such as blinking, yawning, eye closure for more than 2 seconds, or smoking) as well as distractions (like head turns). When such signs are detected, the system sends an alert signal that immediately reaches both the driver and the dispatch center.

3. Electronic issuance of work orders for employees.

Effective organization of the work process and clear allocation of employee responsibilities are crucial aspects of ensuring workplace safety. Solidcore Resources is in the process of implementing an electronic work order issuance system, which facilitates the prompt and accurate assignment of tasks, as well as monitoring their completion.

The electronic work order issuance system is based on the use of specialized software accessible through both stationary and mobile devices. Department managers create assignments for employees, specifying the tasks, the location where they are to be performed, the necessary equipment, and safety



measures. Employees receive the work orders via mobile devices or computers, after which they confirm receipt and completion of the tasks.

The innovative approaches to occupational safety and industrial security being implemented by Solidcore Resources demonstrate high effectiveness in preventing accidents and improving working conditions. The use of modern technologies, such as local positioning and employee health monitoring systems, anti-sleep systems for drivers, and electronic work order issuance for employees, allows the company not only to ensure the safety of its employees but also to enhance the efficiency of its operations.

