Ventilation of pits in underground mining operations.

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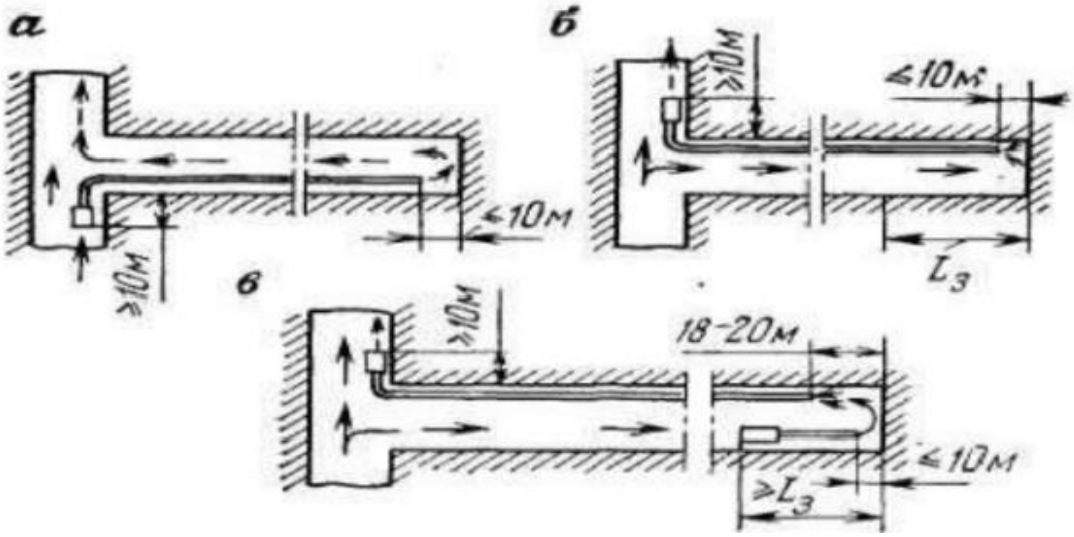
Annotation: The article talks about proper ventilation of pits in underground mining operations, providing mining pits with the necessary equipment for ventilation, measuring toxic gases in the air in the pit after ventilation, and carrying out necessary work as a result, ensuring that fresh air enters the pit.

Special attention is paid to ventilation in underground mining. Unlike open-pit mining, the release of toxic gases in underground mines is very dangerous for workers. Used explosives are selected depending on the atmosphere and category of the mine. In this case, separate blasting and ventilation works are carried out for mines with a risk of dust and gas release and for mines without a risk of gas and dust release. Various harmful gases are added to the atmosphere of mine solder during the transition, mainly by drilling and blasting. The permissible amount of harmful gases in the air from the mining mine in motion is given below

Permissible concentration of gases in moving mining shale (PCG)	By volume, %	mg/ m3
Carbon monoxide, co	0.0017	21.2
Nitrogen oxide, NO2	0.00026	5.3
Sulfid gas, SO2	0.00038	10.8
Hydrogen sulfide, H2S	0.00071	10.8

After drilling and blasting in the mine pit, before entering people, the amount of harmful gases must be reduced to a level of not less than 0.008% by volume of carbon monoxide by means of ventilation. The volume of oxygen in mining areas where there may be people should not be less than 20%. In addition to gases, dust that can cause occupational disease and explosion risk (coal, sulfur, colchedan, etc.) is cleaned by ventilation. By sending heated or cooled air to the mining slurry, the temperature of the slurry can be maintained at the required level. Mine solders are

ventilated during their transition due to general mine depression or with the help of local ventilation fans with ventilation pipes and wells. Three types of ventilation methods are used: air-driven, air-absorbing, and combined. The method of ventilation based on driving air is not widespread. Only this method of ventilation is used in mining operations that are dangerous due to gas and dust. In the air driving method, fresh air is supplied through turbopipes installed in the mining pit, and polluted air is discharged directly through the mine pit. According to the safety rule, the turbopipes should not be more than 10 meters behind the mining pit. The main advantage of this method is that fresh air is directly delivered to the working area.Turbochargers operate at higher pressures than atmospheric pressure when blowing air. Therefore, both rigid and flexible are used interchangeably. The disadvantage of this method is that during the ventilation process, especially after drilling and blasting, the mine field is contaminated with gas and dust along its entire length, and it is impossible to carry out any work there. The use of this method in mine welds of small length is installed at a distance of not less than 10 m from the mouth of the weld.



The main methods of ventilation of horizontal mine welds with the help of fans and pipes.

In the area in front of the pit of the mining site, a turbopipe with the help of a fan is used to drive fresh air. One fan or a second turbopipe that sucks polluted air from the cabin is passed along the entire length of the weld. The air-driving fan is installed outside the area where air pollution may occur during drilling and blasting.

The length of this distance is calculated depending on the mass of PM being blasted, its properties, and the cross-sectional surface area of the deposit. The combined method is effective for ventilation of large and long mine welds with a large cross-sectional surface. However, like the air suction method, it cannot be used in gas and dust-hazardous mines.

Aeration of mines with the help of wells.

In general, in cases where the mines are close to the surface or are very long and there is a high horizon of the mine, it is advisable to ventilate them with the help of wells. The expediency of ventilation of mines with the help of wells is determined by an economic comparison of various options. It is widely used for combined ventilation with the use of fans, ventilation wells, and turbopipes in the passage of dead-end mines. Axial and centrifugal fans are used for the passage of my laxim. Axial fans are compact, and it is necessary to expand the solder or build special chambers when installing them. Local ventilation fan application conditions can vary widely depending on the length of the mine shaft, the amount of air to be supplied, and the availability of electricity. In this case, the air consumption limits of local ventilation fans are set to 20 m3/c per 1, and the full nominal pressure is 800 pa. Below are the technical characteristics of the local ventilation fan. Belts and flexible turbopipes are also used in the ventilation of dead-end mines. Strap pipes are made of wood, plastic, or wood. Wooden pipes are widely used in dry brazing; solid pipes are more durable and are used in cases where the air pressure is high in the mine brazing and the air pressure in the turbo pipe is high. The ventilation of the underground mine strictly followed the ventilation passport, which includes the ventilation scheme used in the plan and cross-section, a description of the ventilation fan, ventilation pipe, ventilation system, and the necessary additional information about the method and means of ventilation.

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