

Safety Measures and Remedies of Occupational Diseases in Mining

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Abstract :- A healthy work environment is the most important assets of individuals, communities and countries. Occupational health is a disciplinary matter concerned with health and safety of workers at their place of employment. Though the organizations have been found more productive where good health and safety mechanism exist. Mining is the one of the most important industry around the world with economic as well as risk prospect. Safe and Efficient Extraction and Processing must be the one of the major goal of a mining companies. Workplace health and safety hazards may turn out to be costly but they are preventable if taken right precautions.

Keywords:- Early detection of Occupational Diseases, Remedies of Occupational Diseases, Occupational Health and Safety (OHS) in Mining.

I. EARLY DETECTION AND REMEDIES TO MAJOR OCCUPATIONAL DISEASES AND SAFETY MEASURES

1.1. Early Detection of Occupational Diseases:

Occupational diseases are unique in the sense that the hazards that cause them are known even before exposure of the workers takes place. This fact makes occupational diseases as being entirely preventable or controllable. The ideal situation of complete prevention of occupational diseases by controlling exposures however, does not occur in practical scenario hence occupational diseases continue to occur.



Sources:- <https://ehqsconsulting.com/services/environmental-health-and-safety-compliance/>

According to World Health Organization Regional Office for the Eastern Mediterranean, Cairo (2001), “To minimize the damage caused by occupational diseases, the best alternative is early detection of pathological changes at a stage when they are reversible. Certain occupational exposures cause early clinical, functional, biochemical, physiological or morphological changes which, can be traced at early stage and are reversible. Unfortunately, there are other occupational diseases which cannot be detected at a reversible stage or at an early stage. These include acute reactions to irritant gases, e.g. ammonia, asphyxiates, e.g. CO and hydrocyanic acid, and corrosive materials etc. The progress of pneumoconiosis can be slowed down considerably if exposure is discontinued. Also, it is well known that detection of occupational cancer at an early stage improves prognosis. Therefore, regardless of the reversibility of the pathological changes caused by occupational exposure, early detection of occupational disease is desirable.”

Early Detection of Major Occupational Diseases Causes					
1. Physical Factor					
Hear	Noise	Vibration	Atmospheric Pressure	Infra-Red Radiation	Ionizing Radiation
The severity of health effects from heat increases with the temperature, humidity and duration of exposure. In order of increasing severity the health effects are: • Lassitude, irritability, discomfort. • Lowered work performance and lack of concentration. • Heat rash. • Heat Exhaustion. • Heat Stroke.	Noise-induced hearing loss can be detected by audiometric. Early loss affects high tones (2000-6000 Hz) long before hearing of every day speech is affected. Noise induced hearing loss is permanent.	Vibrations cause vascular disorders of the arms and body changes in the small bones of the wrist. Vascular changes can be detected by X-Ray examination of the wrist. The most common finding is rarefaction of the lunate bone.	Exposure to increased atmospheric pressure (under water) leads to asptic bone necrosis around the knee, hip and shoulder which can be detected by X-ray examination.	Exposure to infra-red radiation causes cataract, opacity of the eye lens which affects the posterior part of the lens. Cataract causes progressive failure of vision and can be detected by slit lamp examination. The affected lens has to be removed.	Exposure to ionizing radiation also causes cataract. Since the blood forming organs are among the most sensitive to ionizing radiations, the blood should be examined periodically. The leucocyte count is indicative of affection and is more useful if the pre-employment results are available. Keratosis of the skin are pre-cancerous conditions.
2. Biological Agents					
Pulmonary Tuberculosis		Chronic Brucellosis		Viral Hepatitis Band C	
This can be detected by X-ray examination of the chest. Mantoux radiography is a useful tool. A Mantoux test can be strongly positive and Gram-negative, acid-fast bacilli may be detectable on sputum culture.		Chronic brucellosis is difficult to diagnose clinically but can be detected by serological examination (tube agglutination test).		These can be detected by serological examination and determination of hepatitis markers.	
3. Chemical Factors					
1.) Metals					
Lead		Mercury		Manganese	

a.) Essentials of diagnosis	a.) Essentials of diagnosis	a.) Essentials of diagnosis	a.) Essentials of diagnosis
<p>Inorganic-acute effects + abdominal pain (colic) + cephalalgia + haemolysis + acute renal failure</p> <p>Inorganic-chronic effects + fatigue and anorexia + arthralgia and myalgias + anaemia + peripheral neuropathy (motor) + neurobehavioral disturbances and chronic cephalalgia + gout and gouty nephropathy + chronic renal failure</p> <p>Allyl lead compounds + fatigue and lassitude + headaches + nausea and vomiting + neuropsychiatric complaints (memory loss, difficulty in concentrating) + delirium + seizures + coma</p> <p>b.) Early detection of excessive exposure to lead can be determined by: Determination of lead concentration in blood and urine. An average normal value of lead in blood of 20 µg/dl is not unusual in cities with heavy traffic. Patients with lead</p>	<p>Inorganic mercury + acute respiratory distress + gingivitis + tremor + erythema (stomatitis, emotional lability) + proteinuria, renal failure</p> <p>Organic mercury (alkyl mercury compounds) + mental disturbances + ataxia, spasticity + parasthesias + visual and auditory disturbances</p> <p>b.) Early detection of exposure to mercury (inorganic and allyl organic mercury): This is carried out by the measurement of mercury in urine. The normal value in non-exposed individuals is less than 20 µg/l. Organic allyl compounds (methyl mercury) can be estimated in plasma and erythrocytes.</p>	<p>Acute effects + fever + chills + dysnoea (metal fume fever)</p> <p>Chronic effects + Parkinson-like syndrome + behavioural syndrome + pneumonitis</p> <p>b.) Estimation The estimation of manganese in biological fluids does not help in early diagnosis. Detection of the disease in the clinical stage depends on the neuropsychiatric manifestations.</p>	<p>Acute effects + nausea + vomiting + diarrhoea + intravascular haemolysis + jaundice + oliguria (anemic) + cardiovascular collapse</p> <p>Chronic effects + hyperkeratosis and hyper pigmentation (melanosis) + peripheral neuropathy + anaemia + cardiac and peripheral vascular disease</p> <p>b.) Chronic exposure This can be evaluated by measurement of arsenic in urine. In non-exposed normal individuals it does not exceed 20 µg/l. Seafood raises the concentration of arsenic in urine. Estimation of arsenic in hair and nails can give a good index of chronic exposure; however external contamination should be avoided. Hair and nails should be washed thoroughly.</p>

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<p>Inorganic-acute effects</p> <ul style="list-style-type: none"> + abdominal pain (colic) + encephalopathy + haemolysis + acute renal failure <p>Inorganic-chronic effects</p> <ul style="list-style-type: none"> + fatigue and anorexia + arthralgia and myalgia + anaemia + peripheral neuropathy (motor) + neurobehavioural disturbances and chronic encephalopathy + gout and gouty nephropathy + chronic renal failure <p>Allyl lead compounds</p> <ul style="list-style-type: none"> + fatigue and lassitude + headaches + nausea and vomiting + neuropsychiatric complaints (memory loss, difficulty in concentrating) + delirium + ataxia + coma <p>b.) Early detection of excessive exposure to lead can be determined by:</p> <p>Determination of lead concentration in blood and urine.</p> <p>An average normal value of lead in blood of 20 µg/dl is not unusual in cities with heavy traffic. Patients with lead</p>	<p>Inorganic mercury</p> <ul style="list-style-type: none"> + acute respiratory distress + gingivitis + tremor + erythema (dysmet, emotional lability) + proteinuria, renal failure <p>Organic mercury (alkyl mercury compounds)</p> <ul style="list-style-type: none"> + mental disturbances + ataxia, spasticity + parasthesias + visual and auditory disturbances <p>b.) Early detection of exposure to mercury (inorganic and allyl organic mercury):</p> <p>This is carried out by the measurement of mercury in urine. The normal value in non-exposed individuals is less than 20 µg/l. Organic alkyl compounds (methyl mercury) can be estimated in plasma and erythrocytes.</p>	<p>Acute effects</p> <ul style="list-style-type: none"> + fever + chills + dyspnoea (metal fume fever) <p>Chronic effects</p> <ul style="list-style-type: none"> + Parkinson-like syndrome + behavioural syndrome + pneumonitis <p>b.) Estimation</p> <p>The estimation of manganese in biological fluids does not help in early diagnosis. Detection of the disease in the clinical stage depends on the neuropsychiatric manifestations.</p>	<p>Acute effects</p> <ul style="list-style-type: none"> + nausea + vomiting + diarrhoea + intravascular haemolysis + jaundice + oliguria (arsenic) + cardiovascular collapse <p>Chronic effects</p> <ul style="list-style-type: none"> + hyperkeratosis and hyper pigmentation (melanosis) + peripheral neuropathy + anaemia + cardiac and peripheral vascular disease <p>b.) Chronic exposure</p> <p>This can be evaluated by measurement of arsenic in urine. In non-exposed normal individuals it does not exceed 20 µg/l. Scaffold raises the concentration of arsenic in urine. Estimation of arsenic in hair and nails can give a good index of chronic exposure; however external contamination should be avoided. Hair and nails should be washed thoroughly.</p>

1.2. Remedies and First Aid for Occupational Diseases

First aid is the immediate care given to victims of accidents before trained medical workers arrive. Its goal is to stop and, if possible, reverse harm. It involves rapid and simple measures such as clearing the air passageway, applying pressure to bleeding wounds or dousing chemical burns to eyes or skin. The critical factors which shape first aid facilities in a workplace are work-specific risk and availability of definitive medical care, e.g. the care of a high-powered saw injury is obviously radically different from that of a chemical inhalation.

According to World Health Organization Regional Office for the Eastern Mediterranean, Cairo (2001), "First aid is a fluid concept not only in what must be done (how long, how complex) but in who can do it. Although a very careful attitude is required, every worker can be trained in the top 10 crucial steps of first aid. In some situations immediate action can save life, limb or eyesight. Co-workers of victims should not remain paralysed while waiting for trained personnel to arrive. The top 10 crucial steps will vary with each workplace and must be taught accordingly. First aid personnel are persons on the spot, generally workers who are familiar with the specific conditions of work. They might not be medically qualified but they must be trained and prepared to perform very specific tasks. First aid personnel should be selected carefully, taking into account attributes such as reliability, motivation and the ability to cope with people in a crisis situation."

Remedies and First Aid for Occupational Diseases		
	Injuries	Remedies and First- Aid
1.	HEAD INJURIES	<p>Crucial steps:-</p> <ol style="list-style-type: none"> Maintain an airway. Control bleeding. Protect against infection. Prevent further injury. <p>Then:</p> <ul style="list-style-type: none"> In cases of shock, look for other injuries which may be causing blood loss. In case of closed brain injuries, look for symptoms

		<p>such as unusual behaviour, loss of memory, drowsiness, excitability or delirium.</p> <ul style="list-style-type: none"> ◆ Be aware that bruising to the brain may cause convulsion, drowsiness or loss of consciousness. ◆ Be aware that bleeding from the ears, nose and throat is a result of a fracture at the base of the skull. ◆ Do not attempt to remove foreign objects embedded in the head as this may cause uncontrollable bleeding. ◆ Apply head dressings in such a manner that they will not slip off during transportation to hospital. ◆ Place the patient on his/her side to allow proper drainage. ◆ In cases of respiratory centre damage, apply mouth-to-mouth resuscitation to ensure an adequate supply of oxygen.
2.	FACIAL INJURIES	<p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Check for obstructed airway as facial injuries may cause external bleeding resulting in blockage of airway. The bleeding from the oral cavity can be particularly heavy. ii.) Control bleeding by realigning the jaw, i.e. by grasping the chin and pulling it straight out. iii.) Maintain the airway by turning the victim on his/her side.
3.	CHEST INJURIES	<p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Seal the chest wound from the outside as quickly as possible. ii.) Never extract foreign objects from the chest wound. iii.) Maintain airway. iv.) Administer oxygen. v.) Apply mouth-to-mouth resuscitation and external heart massage if necessary. vi.) Transport the patient in a sitting position unless he/she is in shock.
4.	ABDOMINAL INJURIES	<p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Cover the wound with a sterile dressing; apply a compression binder to control haemorrhaging. ii.) Look for any penetrating wounds and other symptoms such as vomiting, abdominal pain and tenderness. iii.) Never attempt to replace protruding organs, cover them with sterile gauze and keep the cloth moist. iv.) Place the patient in a semi-sitting position unless he/she is in shock. v.) Keep the patient warm with

		<p>blankets. vi.) Never give the patient anything to drink or eat.</p>
<p>5.</p>	<p>EYE INJURIES</p>	<p>◆ Do not interfere with eye injuries except in minor cases. Refer the victim to hospital immediately.</p> <p>◆ Symptoms of serious eye injury are:</p> <ul style="list-style-type: none"> - blurred vision that does not clear with blinking - loss of all or part of the visual field of an eye - sharp stabbing or deep throbbing pain - double vision. <p>◆ Signs of eye injury that require ophthalmological evaluation are:</p> <ul style="list-style-type: none"> - black eye - red eye - an object on the cornea - one eye that does not move as completely as the other - one eye protruding more than the other - one eye with an abnormal pupil size, shape or reaction to light - a layer of blood between the cornea and the iris (hyphaema) - laceration of the eyelid, especially if it involves the lid margin - laceration or perforation of the eye. <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Any chemical splashed into the eye(s) must be considered a vision-threatening emergency. Forcibly keep the patient's eyelids open while irrigating with water for at least five minutes, then refer the patient to an ophthalmologist. Inform the ophthalmologist of the nature of the chemical contaminant. ii.) Patch the injured eye lightly with a dry, sterile eye pad. If laceration of the eye is suspected, add a protective shield over the sterile eye pad. Instruct the patient not to squeeze the eye tightly shut because it greatly elevates the intraocular pressure. Calmly transport the patient to the ophthalmologist. iii.) Conjunctivitis, with normal vision and a clear cornea, may be treated with an antibiotic eye ointment for several days. If there is no improvement, referral to the ophthalmologist is indicated. iv.) Never put eye ointment in an eye about to be seen by the

		<p>ophthalmologist. The ointment makes clear visualizations of the retina very difficult.</p> <p>v.) Never give a patient a topical anaesthetic to relieve pain, such as from a flash burn. The prolonged use of topical anaesthetic can result in blindness from corneal breakdown.</p> <p>vi.) Never treat a patient with a topical steroid unless directed by the ophthalmologist. Topical steroids can make several conditions much worse, such as herpes simplex, keratitis, fungal infections and some bacterial infections.</p> <p>vii.) If in doubt as to how severe an ocular symptom sign is, always err on the side of caution and refer the employee to an ophthalmologist for diagnosis and treatment.</p>
<p>6.</p>	<p>FRACTURES</p>	<p>There are two types of fracture:</p> <ol style="list-style-type: none"> 1. Simple fracture (closed fracture): the skin covers the fracture. 2. Compound fracture (open fracture): the skin is broken and the bone has direct contact with the open air. <p>It is essential to remember the following:</p> <ol style="list-style-type: none"> 1.) Do not harm. Unwise attempts by the patient to continue to use a fractured extremity may cause laceration of the soft tissues and may lead to the broken bone penetrating the skin or to the onset of shock. 2.) Protect and immobilize. Apply a splint to the fracture so the victim can be moved more comfortably and without causing any further injuries. <p>(A.) Fractures of the extremities:</p> <p>Crucial steps:-</p> <ol style="list-style-type: none"> i.) Place the injured limb in as natural a position as possible before padding and splinting. ii.) If the broken bone is not protruding above the skin, apply traction to overcome the muscle and to straighten the limb with minimum pain. If the broken bone is protruding above the skin, do not apply traction to avoid contaminating deep tissues. iii.) To control bleeding, apply gentle pressure by covering the wound with a sterile dressing and wrapping with an

		<p>elastic bandage.</p> <p>iv.) Never attempt to set an open fracture. Apply the proper splint before moving the patient.</p> <p>(B.) Fracture of the spine and pelvis</p> <p>A spinal fracture may occur in the neck and upper or lower spine and may affect the spinal cord. Symptoms of fracture to the spine include severe back pain and numbness and tingling in the arms and legs. Pelvic fractures are common but hard to spot. They are usually associated with other injuries which may be severe and cause shock. A fractured pelvic bone may pierce the bladder and may cause intestinal obstruction.</p> <p>Crucial steps:-</p> <p>Unless you have been trained in the correct way to move a suspected spinal fracture, do not attempt to move the victim unless leaving him would expose him to further danger.</p> <p>i.) Ensure that the victim has an adequate airway.</p> <p>ii.) Transport a patient with a (suspected) broken neck on his/her back on a rigid support.</p> <p>iii.) The patient must be moved as a unit by 3–5 men, one of whom must firmly hold the patient’s head.</p> <p>iv.) To prevent unnecessary movement, place blanket rolls or pillows along the side of the patient.</p> <p>v.) Place a patient with a (suspected) fractured pelvis gently on his/her back on a firm stretcher.</p> <p>vi.) Immobilize the pelvic region by bandaging the knee and ankle together firmly with padding placed between the knees for comfort.</p> <p>vii.) Wrap a broad bandage or folded blanket around the patient’s hips from just above the hip bone to approximately 5 cm down on the thighs.</p> <p>viii.) Prevent shock.</p>
<p>7.</p>	<p>THERMAL INJURIES</p>	<p>(1.) Burns:</p> <p>◆ There are three main types of burn: thermal, electrical and chemical.</p> <p>◆ Estimate the seriousness of the burns by using the Rule of Nine: the head and neck comprise 9% of the skin area; the chest, 18%; the back, 18%; each arm, 9%; and each leg 18% (for the sake of completeness the genitals/perineum comprise 1%).</p> <p>◆ First degree burns are superficial with reddening of the skin.</p> <p>◆ Second degree burns extend deeply into the skin with redness.</p>

		<p>◆ Third degree burns involve the entire thickness of the skin.</p> <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Prevent shock. ii.) Do not attempt to remove patient's clothes except in case of a chemical burn. iii.) Wrap the patient in a clean sheet to prevent infection. iv.) Maintain body temperature. v.) Neutralize the chemical agent if a neutralizer is available. vi.) Determine what chemical agents have been the cause of the burns before transferring the patient to hospital. <p>(2.) Cold: Long exposure to extreme cold results in hypothermia and coma. The initial symptoms of frostbite are tingling, numbness, pain, violated red skin followed by a constant burning and itching sensation and then loss of all sensation in the affected area. Prolonged exposure to extreme cold results in the onset of hypothermia and ultimately, the victim will lapse into a coma.</p> <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Immerse the affected part in water heated to between 40 °C and 42 °C. ii.) Do not attempt to thaw the affected area. iii.) Do not place the victim close to fire. iv.) Do not massage the affected area. <p>(3.) Heat stroke: Factors contributing to heat stroke are: workload, thermal environment, stress, non-acclimatization, poor work conditions, overweight, unsuitable clothing, poor ventilation, dehydration or shortage of water, alcohol consumption, history of cardiovascular diseases or recent prickly heat.</p> <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Confirm suspected cases of heat stroke by measuring the body temperature. A person with a temperature between 40 °C and 43 °C would be considered a victim of heat stroke. ii.) Sponge with cool water, wrap in cool sheets or towels or blow cool air over patient.
8.	POISONING	Crucial steps:-

		<ul style="list-style-type: none"> i.) Induce vomiting as quickly as possible by administering a tablespoon of ipecac syrup except in instances of ingestion of acids, alkalis and petroleum products. Administer water, milk or universal antidotes; water should be used if there is nothing else available. Do not give fluid to an unconscious person. ii.) In instances of ingestion of acids, alkalis, petroleum products and other caustics: attempt to identify the specific product, the concentration of the active ingredients and the estimated volume ingested. The product container or labels may be available. A diluent may be beneficial if given within 30 minutes of a solid or granular alkaline ingestion. Water or milk may be administered, dosages of 250 ml in adults and 15 ml/kg in children. Induced emesis and attempts at neutralizing the substance by using a weak acid or alkali are absolutely contraindicated. iii.) Administer mouth-to-mouth or mechanical resuscitation if there is difficulty in breathing. iv.) If poison is in contact with the skin, remove all contaminated clothing and flood the affected area with water. v.) If poison is in contact with the eyes, irrigate both eyes with large quantities of water. vi.) Identify the poisoning material or collect all vomited material in a container and transport it to the hospital with the patient for laboratory analysis.
9.	HAEMORRHAGE	<p>Haemorrhage may be arterial, venous or capillary.</p> <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Apply pressure with fingertips to the pressure points and a bandage as necessary. ii.) Apply tourniquet only when other methods fail and in the case of a life threatening haemorrhage. iii.) A tourniquet should consist of a flat band at least one inch wide such as a tie, handkerchief, towel, scarf or belt. Never use rope or wire. It should only be applied in two places depending on the site of the injury: <ul style="list-style-type: none"> – the arm, a hand's width below the elbow; or

		– the leg, a hand’s width below the groin.
10.	SHOCK	<p>Shock means there is not enough blood circulating through the body. Symptoms of shock include: pale, cold and moist skin, shallow breathing, bluish fingernails and lips, thirst and restlessness.</p> <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Treat shock by removing the cause: stop the bleeding, relieve the pain, and splint the fracture. ii.) Prevent infection and maintain body heat. iii.) Lay the patient flat. iv.) Burn victims suffering from shock should be given liquids in small amounts.
11.	IMPAIRED BREATHING	<p>Mouth-to-mouth resuscitation</p> <ul style="list-style-type: none"> i.) Lear the mouth and the throat of any dentures, mucus, food, blood or other obstructions. ii.) Tilt the head back as far as possible and stretch the neck. iii.) Lift the lower jaw forward. iv.) Pinch the nose. v.) Open your mouth wide sealing your lips over those of the victim, takes deep breath and blow forcefully until you see the victim’s chest rise. vi.) Remove your mouth when you see the victim’s chest rise; listen for exhalation. vii.) Continue the same procedure 12–20 times per minute.
12.	SILICOSIS	<p>Silicosis is caused by exposure to silica dust. Silica is a common mineral released from sand and rocks during mining, exposing many miners to harm.</p> <p>Crucial steps:-</p> <ul style="list-style-type: none"> i.) Drink plenty of water to help loosen mucus from the lungs. ii.) Keep breathing passages open. Fill a bowl with steaming hot water and strong-smelling herbs such as eucalyptus, oregano, mint, or thyme. Put your head over the bowl, cover yourself with a towel or cloth, and breathe the vapours. Do this for 15 minutes at a time, several times a day. iii.) Medicines called bronchodilators can help open the breathing passages. The kinds that are inhaled work fastest. iv.) Hospitals may give oxygen to help a person breathe more easily. v.) Home-made cough syrup can reduce painful coughing. Mix: 1 part honey + 1 part lemon juice, take a teaspoon in every 3 hours.

		vi.) Some people believe dairy foods like milk, cheese, and butter make mucus thicker and more difficult to cough up. If eating these foods makes you feel worse, avoid them as long as you can get good nutrition from other foods.
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II. OHS IN MINING

Mining is the one of the most important industry around the world with economic as well as risk prospect. Safe and Efficient Extraction and Processing must be the one of the major goal of a mining companies. The dangers associated with the mining operations are more since they have to operate on remote and less hospitable regions. In order to know the severity we need to imagine the life of mine worker who risks their lives for achieving the company's objective. So it becomes company's responsibility to have a proper safety system in place which ensures the Safe work environment in mines. From the corporate point of view, mounting safety incidents do more than affecting corporate reputation. They impact a company's license to operate and the ability to attract and retain talent, particularly when employees must deal with the serious injury or loss of a colleague. In some cases, companies may even be exposed to serious penalties for violations that result in injuries or death, as well as criminal liability to corporations, their representatives and those who direct the work of others, including contractors and that why OHS becomes a strategic goal for many mining companies.



Sources:- <http://www.rediff.com/business/report/pix-column-finding-double-digit-growth-in-indias-gdp-fog/20150317.htm>

According to **Elgstrand, Vingard (2013)**, the traditional picture of the working conditions in mining and quarrying is that the work is physically demanding and dangerous due to heavy machines and loads, unstable underground structures, great accident risks, exposure to toxic dusts and chemicals and heat and cold. The mining work often takes place underground with bad lightening, high up in the mountains or in remote areas where schools, health care and other social services are scarce or non-existent as well as the family and community support. It may be understood from the conditions of the mines that how important Occupational Health and Safety is nowadays.

III. CONCLUSION

A healthy work environment is the most important assets of individuals, communities and countries. Due to the rapid economic growth and industrial progress in our country, it becomes important to provide imperative safety and health at the workplace. Occupational health is a disciplinary matter concerned with

health and safety of workers at their place of employment. Mining is one of the most hazardous businesses causing the more fatalities than any other occupation. Mining labour and health conditions are changing due to the impacts of globalization. Mining is male dominated profession and health & safety risk differs according to location, product and the product. In some mines hazard doesn't come from the product but from the hazardous material used in the process. Though labour oriented markets are changing to automation but the general awareness about the occupational safety and environmental hazards are not spread in the society. Workers are more likely to be affected by the danger of the high technology. There are very few professional agencies like NIOH and ITRC researching on asbestosis and asbestos related disease. Due to poor surveillance it is impossible to assess the occupational exposure. There is some awareness or implementation of safety after the Bhopal Gas Tragedy. Most of the industrial laws in India are only in papers not in reality. Unsafe conditions in mines cause loss and injury to human lives, damage to property and interruption in production. Safety is paramount in mining environment. A Safety Management System (SMS) focuses on the traditional Occupational Health and Safety (OHS). Present conditions of mine environment and safety risk is at low. Workplace health and safety hazards may turn out to be costly but they are preventable if taken right precautions. The most prominent hazard in mining is communicable disease it affects the large portion of workforce. Job hazards analysis and risk mapping can prevent many accidents at work. Workplace accidents can be reduced by educating employees, it doesn't cost a lot and it could be proper training, monthly journal or emails.

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