**Incident category :** Crane hazards

**Incident cause :** Accident hazards

**1). Reason for the cause :** Falls from heights, esp. when carrying out inspection work or working from suspended platforms.

**Corrective measures :** Use adequate fall restraining equipment (harnesses, lanyards, etc.) when working on heights. Inspect ladders before climbing. Never climb on a shaky ladder or a ladder with broken or slippery rungs

**Preventive measures :** Install a grab rail round the perimeter of all surfaces on which personnel may have to stand, do not use a crane to hoist workers on a suspended platform

**2). Reason for the cause :** Slips, trips and falls (esp. while carrying heavy or bulky loads, or on wet ground)

**Corrective measures :** Immediate first aid should be given to the employee

**Preventive measures :** To provide shoes with slip free soles and spikes

**3). Reason for the cause :** Falls of loads on head, feet or other parts of body

**Corrective measures :** immediate first aid should be given and verify the cause of the incident

**Preventive measures :** All persons in the vicinity of cranes in construction work must wear hard hats, safety shoes and other PPE as appropriate to minimize the effect of blows by falling or moving objects

**4). Reason for the cause :** Blows to or crushing of head or other parts of the body by swiveling loads or crane parts, or by the counterweight, as a result of operator error or misunderstanding of signals

**Corrective measures :** immediate first aid should be given and verify the cause of the incident

**Preventive measures :** All persons in the vicinity of cranes in construction work must wear hard hats, safety shoes and other PPE as appropriate to minimize the effect of blows by falling or moving objects

**5). Reason for the cause :** Injuries to whole body or body parts as a result of tipping or collapse of the crane or parts thereof (in particular when trying to hoist loads greater than the rated load, or at angles or operating radii outside the approved ones)

**Corrective measures :** immediate first aid should be given and load should be removed and damage in the crane should be rectified

**Preventive measures :** All persons in the vicinity of cranes in construction work must wear hard hats, safety shoes and other PPE as appropriate to minimize the effect of blows by falling or moving objects

**6). Reason for the cause :** Entanglement of clothing, hair, beards, hands or feet in moving parts of machinery, belts, ropes, chains, etc.

**Corrective measures :** should be separated as soon as possible without creating damage to the machine and employee and first aid should be done

**Preventive measures :** All persons in the vicinity of cranes in construction work must wear hard hats, safety shoes and other PPE as appropriate to minimize the effect of blows by falling or moving objects

**7). Reason for the cause :** Entrapment or crushing between moving or rotating structures

**Corrective measures :** Allow adequate clearance between moving or rotating elements of the crane and fixed structures to prevent crushing or entrapment

**Preventive measures :** Allow adequate clearance between moving or rotating elements of the crane and fixed structures to prevent crushing or entrapment

**8). Reason for the cause :** Cuts and injuries caused by sharp instruments and tools during maintenance work

**Corrective measures :** Immediate first aid should be given and need to remove dangerous instruments and tools

**Preventive measures :** All persons in the vicinity of cranes in construction work must wear hard hats, safety shoes and other PPE as appropriate to minimize the effect of blows by falling or moving objects

**9). Reason for the cause :** Electric shock or electrocution, caused by defective installations and equipment, or by contact of metal booms of the crane, or chains, with power lines

**Corrective measures :** Defective equipment’s should be replaced or rectified and immediate treatment should be given to the employee

**Preventive measures :** Check electrical equipment for safety before use. Call a qualified electricity technician for testing and repair of faulty or suspect equipment

**10). Reason for the cause :** Muscular-skeletal injury (esp. of back), resulting from lifting and moving of heavy loads

**Corrective measures :** Immediate therapy should be given and lifting heavy loads should be assigned to the qualified employees

**Preventive measures :** Learn and use safe lifting and moving techniques for heavy or awkward loads

**Incident cause :** Physical hazards

**1). Reason for the cause :** Crane operators on building and construction sites work in all conditions, including extreme conditions of cold and or heat

**Corrective measures :** proper dress should be provided to those weather conditions

**Preventive measures :** Wear adequate clothing and head-gear for skin and head protection in adverse weather

**2). Reason for the cause :** Exposure to strong sunlight

**Corrective measures :** caps and sun cream or glasses should be provided as per the condition

**Preventive measures :** Wear adequate clothing and head-gear for skin and head protection in adverse weather

**3). Reason for the cause :** Exposure to noise and vibrations from the engine (electric, diesel, gasoline or other)

**Corrective measures :** damaged equipment’s should be replaced to reduce the vibration of the machine

**Preventive measures :** Wear adequate clothing and head-gear for skin and head protection in adverse weather

**Incident cause :** Chemical hazards

**1). Reason for the cause :** Dermatitis as a result of exposure to lubricating oils during maintenance work

**Corrective measures :** Wear adequate clothing and head-gear for skin to protect from acids and unwanted oils

**Preventive measures :** Wear adequate clothing and head-gear for skin to protect from acids and unwanted oils

**2). Reason for the cause :** Exposure to oxygen-deficient atmospheres (e.g., from accumulation of exhaust gases)

**corrective measures :** Providing face masks and oxygen cans for the employees to avoid sudden risk

**Preventive measures :** Maintaining the atmosphere day to day by doing internal and external verification

**Incident cause :** Biological hazards

**1). Reason for the cause :** Bites by snakes, rodents and insects in construction sites

**Corrective measures :** first aid should be given to the employee immediately

**Preventive measures :** proper housekeeping should be done and need to remove unwanted materials or goods

**2). Reason for the cause :** Hazardous Weather - working at great heights without the awareness of rain, ice, snow, and wind conditions

**Corrective measures :** immediate recovery should be done in the case of rain, ice and wind

**Preventive measures :** Proper weather report should be provided to the employee before going to the work

**Incident cause :** Ergonomic, psychosocial and organizational factor

**1). Reason for the cause :** Repetitive strain injury (RSI) and other Muscular-skeletal problems, as a result of continuous repetitive movements

**Corrective measures :** immediate therapy should be given and regular break of interval should be given to the employee

**Preventive measures :** Learn and use safe lifting and moving techniques for heavy or awkward loads

**2). Reason for the cause :** Overexertion during lifting and moving of heavy loads

**Corrective measures :** loads should be reduced in order to establish a fair working environment

**Preventive measures :** Learn and use safe lifting and moving techniques for heavy or awkward loads

**3). Reason for the cause :** Back problems and leg fatigue if sitting in an improperly designed chair

**Corrective measures :** First aid should be given and regular break intervals for the employees should be provided

**Preventive measures :** Chairs should be provided as per the employees comfortable and convenient

**4). Reason for the cause :** Fatigue and Muscular-skeletal problems caused by vibrations

**Corrective measures :** proper therapy should be given to the particular employee

**Preventive measures :** need to replace the damaged parts to reduce the vibration of the machines

**5). Reason for the cause :** Crane operators work irregular hours and may also work at night and at weekends

**Corrective measures :** proper light facility and safety kit should be provided to the employees in night shifts

**Preventive measures :** works on night shifts and weekends should not be assigned to the employees