



KUWAIT NATIONAL PETROLEUM COMPANY

SAFETY REGULATIONS

CHAPTER - 05

PERSONAL PROTECTIVE EQUIPMENT

IMPORTANT

Mandatory rules (or “must”) are characterized by the word “SHALL” throughout the text. Advisory rules or recommendations are indicated by the word “SHOULD”. The words 'shall and should' have been used to remain in line with the terminology used by American National Standard Institute.

REFERENCES

KNPC PPE Specifications, OSHA 1910.(95,126, 134), 1926.(52,95-107) Patty's Industrial Hygiene, Safety Encyclopedia (ILO), Best's Safety Directory, Accident Prevention Manual (NSC), NFPA 104, ANSI A10.14, ANSI/CGA spec G-7, USCG 160-0641700

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PERSONAL PROTECTIVE EQUIPMENT

5.1 INTRODUCTION & GENERAL REQUIREMENTS

1. **Personal Protective Equipment (PPE)** is meant to provide protection against the residual hazards of any work place that cannot be eliminated after implementing other means of control, e.g., extensive engineering revision of processing plant design or simple change in material handling methods. Conditions stipulated in this section apply to all the following sections.
2. The employer (KNPC or Contractor) shall provide all PPE in correct size and type, which shall meet the approved KNPC Specifications (See Appendix - A). All PPE shall be maintained in good condition and the employer shall immediately replace any damaged, defective or dangerously contaminated PPE.
3. The employee (KNPC or Contractor) shall wear the recommended minimum PPE at the worksite as specified in the work permit or work procedure. He/she shall wear these in right type, size and proper manner. His/her supervisor shall ensure availability, condition and compliance.
4. **Worksite** shall mean operating areas including the approach, lab, workshops, warehouses, yards and construction sites or any other location with hazardous activities.
5. Personnel shall not wear loose clothing such as dish-dasha, qutra, rings, earrings, wristwatches, etc at worksite. Visitors shall wear safety helmet and safety shoes as the minimum requirement during site visits.
6. The employer (KNPC or Contractor) shall provide thorough training to the employees to familiarize with the correct use and maintenance of PPE.
7. The KNPC Safety Division shall approve sample during purchase of every new batch of PPE (stock replenishing and contractor's purchase). While accepting a new batch, warehouse or the contractor shall ensure conformity to approved sample.
8. Appropriate PPE signs shall be prominently displayed at locations of specific hazards (Ex: ear protection sign at noisy area).
9. Material Safety Data Sheet (MSDS) shall be referred to when selecting PPE for handling uncommon hazardous materials. In case of doubt, advice of KNPC Safety division should be requested.
10. Warehouse shall ensure the availability of adequate stocks of PPE.

5.2 PROTECTIVE FOOTWEAR

1. All employees and contractors in restricted areas shall wear foot protection appropriate to the hazards and severity of exposure.
2. **"Safety Boots"** which are ankle high, provide protection against impact, compression, oils, heat, electricity, static, slipping, and penetration by sharp objects. This is the standard type to be worn by most employees.
3. **"Safety Shoes"** provide less protection than the safety boots as it lacks puncture and ankle protection. Employees below superintendent level shall not wear this type.
4. Female employees shall wear "Safety Shoes for Women" which are basically similar to "safety shoes".

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- While the safety boots/shoes provide adequate protection against most common hazards, special types of footwear are required for specific hazards, which are described in relevant chapters. (Ex. welder's safety boots, chemical handling boots, fire fighter's boots, etc.)

5.3 HEAD PROTECTION

The standard **Safety helmet** provides protection from impact, falling objects, hot surfaces and electric shock.

- All personnel (including visitors) shall wear appropriate head protection at **worksite**. **Labs and workshops are exempted only if overhead falling object hazard does not exist or have been eliminated.**
- Employee shall secure the safety helmet with a chinstrap to prevent accidental falling, while working on elevations, high winds and confined or restricted spaces.
- Changes in safety helmet, e.g., painting of the shell, drilling of holes in shell, or modifying suspension system shall not be done.
- The employee shall wear helmet of right colour with company logo (KNPC or the contracting company) as per the color-coding for identifying different crafts.

Operations	– Green	Mech. Maintenance	– Tan
Instrument	– Orange	Electrical	– Yellow
Safety	– Pea Green	Projects	– Sky Blue
Fire	– Red	Security	– Copper Blue
Tech. Services, Inspection & other departments	– Gray		
KNPC Supdt. & above	– Golden	Visitors	– White
- The user should periodically inspect safety helmet for visible signs of cracks on shell, damage to suspension system and be replaced if required. It should be periodically cleaned with mild soap and cold water. It shall not be mishandled, e.g., thrown around or used for sitting.

5.4 PROTECTIVE CLOTHING

- Protective clothing (**coverall, general use**) provides protection against dust, grease and to some extent against heat and bruises. Employees, at all times while at worksite shall wear the normal Cotton or Cotton/ Polyester **coveralls** provided to them unless the nature of job warrants specialized clothing.
- Size of coveralls should be selected to ensure a close fit. Sleeves shall always be kept rolled down and properly tied with wrist. When working near rotating machinery, employee shall ensure that his clothing does not come in contact with rotating parts
- Disposable coveralls** should be used when working in areas having nuisance dust, e.g., sulfur, coke, and catalyst dust.
- Specialised clothing** shall be worn against specific hazards. Ex. lab coat, fire proximity suits for extreme heat, welder's aprons for protection against hot metals and welding sparks, PVC suits for handling of corrosive/toxic substances and specialized clothing for TEL/TML handling. These are described in relevant chapters. In case of doubt, advice should be obtained from KNPC Safety.
- All protective clothing should be maintained in hygienic and good condition. Manufacturer's cleaning instructions shall be followed.

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5.5 HAND PROTECTION

1. **General-purpose hand gloves** provide protection against usual job hazards such as slipping, abrasion, dirt, oil, grease and moderate heat. These shall be worn at all times during the normal course of work.
2. The right type of gloves shall be selected to give maximum protection against the **specific hazards** of the job, e.g., handling corrosive/toxic chemicals, working on electrical circuits, welding and handling high temperature material, which are described in relevant chapters.
3. Gloves should not be worn while working with a running rotating equipment to prevent the risk of entanglement.
4. Barrier creams should be used only as directed by Medical Division.
5. Hands should be thoroughly washed with soap and water on removal of safety gloves particularly at the end of a working period and before meals.
6. Only hand cleaning solvents approved by Medical Division shall be used for cleaning greasy hands. Non-approved solvents like naphtha, benzene and gas oil etc. shall not be used for cleaning hand.

5.6 HEARING PROTECTION

1. There are many areas where, in spite of application of good engineering design practices and providing acoustic insulation, residual noise level is more than the allowable limit of 85 decibels for 8 hour workday (continuous noise measured on A-scale of a standard sound level meter at slow response).
2. Exposure of personnel to higher noise levels may result in irreversible loss of hearing. High noise areas shall be surveyed yearly and marked with "wear ear plug" sign or symbol.
3. Therefore, the personnel working in high noise area shall use hearing protection. Earplug or earmuff or a combination of both can be used. These personnel shall be checked yearly by audiometric tests to determine the effectiveness of the hearing protection program.
4. Exposure to impulsive or impact noise shall not exceed 140dB peak sound pressure level (Impact noise means the gap between peaks are more than one second). As a guideline, exposure limit of 100 impulses at 140dB and 10 times more for each 10dB less are recommended.

5.7 EYE AND FACE PROTECTION

Eye protection is required in a wide range of occupations against flying particles, foreign bodies, chemical fumes and radiation. The whole face needs protection while carrying out hazardous activities such as welding, heater checking and chemical handling. Employees shall not wear contact lenses while exposed to heat, corrosive and impact hazards (ex. heater checking, welding, chemical handling, grinding, etc.).

5.7.1 SAFETY SPECTACLES – GENERAL USE (SAFETY GLASSES)

All employees at worksite shall wear safety spectacles to protect their eyes from moderate impact hazards. They shall wear Clear spectacles in nighttime and poor illuminated areas. Tinted safety spectacles are recommended for additional protection against sun glare and UV radiation.

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Safety spectacles shall not be used as an alternative for safety goggles. Prescription spectacles are not considered as eye protection and custom made spectacles or face shield shall be worn.

5.7.2 SAFETY GOGGLES – GENERAL USE

General Safety goggles shall be used against impact by flying particles while engaged in activities such as grinding, chipping, jack hammering and coke handling etc.

Special type goggles shall be used to protect eyes from chemical splash and eye irritant gases and dust. Welder's eye protection is covered in Chapter-11.

5.7.3 FACE SHIELD

- Face shield for general use** shall be used to protect the face from injuries due to certain activities such as grinding in restricted position / location, hydro blasting, handling mild skin irritant chemicals, etc.
- For severe exposure, face shield shall be used in combination with goggles, e.g. Handling corrosive chemicals, caustic, sulfuric acid, etc.
- Face shield for furnace inspection** shall be used for protection against high heat radiation and UV radiation such as heater firing/inspection.
- Special type face protection for welding and sand blasting are covered in relevant Chapters.

5.8 FALL PROTECTION

- Each employee on a walking/working surface 6ft(1.8m) or more above lower levels shall be protected from falling by a guardrail system, safety net, or personnel fall arrest system.
- Personnel fall arrest system** consists of anchorage, connectors, **safety harness** (body harness) and may include lanyard, deceleration device, lifeline or suitable combination of these. Also it can serve as a body-positioning device and for rescue from a confined space.
- Safety belt** (body belt) shall not be used for fall protection if the free fall exceeds 2ft (60cm).
- In case of a fall, the body harness distributes impact forces over a wide body area reducing the possibility of injury to wearer and keeps the wearer in an upright posture.
- Free fall shall be limited to 1.8m distance and to avoid contact with a lower level. Decelerating devices shall bring a person to complete stop within 3.5ft(1m) of decelerating distance.
- Lanyard is a short piece of flexible line used to secure the wearer of safety belt to a lifeline or fixed anchorage. Lanyards must be in nylon rope or equivalent.
- Lifelines are usually rope systems that provide flexibility for worker, freedom of movement yet will arrest a fall and help absorb the shock. The lifeline shall extend from a supporting device and shall be connected to the user lanyard. If a considerable free fall is unavoidable then some form of shock absorber or decelerating device shall be used to cushion the impact due to fall. Wire rope shall not be used as a lifeline because of its electric conductivity and poor shock absorption to limit the impact load to prevent injury to the wearer. (See Chapter-8 for Lifeline signals).
- The workers shall use the correct method of fastening their belts. They should be able to carryout quick release of the buckle, in case of an emergency. Lanyard should be preferably anchored at a higher elevation to minimise freefall.

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9. User shall check system components before and after each use for physical damage. User division or contractor shall arrange quarterly inspection of these by KNPC or Contractor Safety. Components shall be color-coded. Contractor shall forward the report to KNPC Safety.

5.9 SAFETY NET

1. Where due to special nature of the work being carried out, it is not possible to provide standard working platforms with guardrails and toe boards, safety nets shall be provided. If it is not practical to install a safety net, safety belts or harnesses shall be used.
2. Personnel nets used for preventing injury to persons falling from heights normally have a 4" size diamond or square shaped mesh.
3. Debris nets used to prevent injury/damage to persons/property from objects falling from heights normally have a 3/4" size diamond or square shaped mesh. Debris net can be attached to personnel net or used separately.
4. Net shall be subjected to a thorough visual inspection before each installation and once every month for frayed or cut cords. Nets shall not be used if any doubt exists regarding its strength.
5. Nets shall be properly secured when rigged.

5.10 LIFE JACKETS AND LIFE BUOYS

1. **Life jackets** shall be worn by all personnel sailing or working over or near the water, unless suitable measures like safety net, proper working platform etc. have been provided to eliminate the hazard of their falling into water.
2. Irrespective of suitable measures to eliminate the hazard of personnel falling into water, life jackets shall be worn during rough sea and hours of darkness.
3. Life jackets shall be non-inflatable type and shall comply with the requirements of US Coast Guard Standard USCG 160-064/700 or equivalent. They shall be maintained in good condition and stored properly as per manufacturer's instructions. Personnel shall be instructed in their proper use.
4. **Life buoys** shall be available in readily accessible locations near the place where work is being done over or near the water surface and on boats. They shall be equipped with a self-operating marker light and fitted with a line not less than 90 ft. (27 meters) in length. Distance between adjacent buoys shall not exceed 200 ft (60 meters). They shall be periodically inspected to ensure that the line, marker light, and buoy are in good and operable conditions.

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5.11 RESPIRATORY PROTECTION

Personnel entering or working in an atmosphere that contains, or is suspected to contain toxic substances and/or is deficient in oxygen shall wear appropriate respiratory protection as per Appendix-B. The correct choice of respiratory protective device depends on:

- The type, properties and concentration of air contaminant
- The duration for which respiratory protection is required
- The location where respiratory protection is required with respect to a source of uncontaminated respirable air
- The oxygen percentage in the atmosphere
- The functional and physical characteristics of respiratory protective device

In case of doubt, KNPC Safety shall be consulted before selecting respiratory protective devices for any job.

Certain substances that cause damage to the respiratory system can also be absorbed through the skin and result in injuries. Workers shall wear appropriate body protection to avoid absorption through skin in such environment.

Respiratory protective devices can be classified as follows-

- Air purifying respirators (dust mask, gas mask, etc)
- Air supplied respirators (Air Line Mask, SCBA, Escape Mask, SCUBA)

5.11.1 AIR PURIFYING RESPIRATORS

Air purifying equipment shall be used only if the atmosphere contains sufficient oxygen to sustain life (i.e., at least 19.5% by volume). Users shall be instructed in the use and limitations of these respirators.

A) PARTICULATE FILTER RESPIRATORS

1. Particulate (mechanical) filter respirators are designed to give satisfactory protection against any type of particulate matter (Ex. dust, oil mist, metal fumes, etc). These are available from simple disposable type to filter changing type with face piece. Selection depends on the particle type, size and concentration. They shall be used for routine non-emergency exposures and not for any protection against gases or vapors.
2. **Dust Mask** (disposable type) made of filter paper is suitable for protection against nuisance dust/fiber. It shall not be used for protection against harmful dust, mist or fibers.
3. Filter changing type with half or full-face piece can provide increased protection. Face piece shall be cleaned and disinfected after every use and provided with a new filter. They shall be regularly inspected and properly stored.

B) GAS MASKS (CHEMICAL CARTRIDGE/CANISTER RESPIRATOR)

1. The gas mask normally consist of a cartridge or a canister containing chemicals, either directly mounted to or connected through a flexible tube to a full or half face piece. Canister/cartridge is filled with chemicals to remove the contaminants from the air through chemical reaction.
2. Canisters/cartridges shall be carefully selected to protect against the specific hazard. Because no one chemical can remove all gaseous contaminants, canisters are designed for specific gas/vapor or a single class or a group of gases or vapors.

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3. Duration of a canister depends on the amount of chemical in it, concentration of the air contaminant/s and the length of exposure. User shall move out of contaminated area if any odor or taste or irritation of nose or throat is felt during its use. While small single or twin cartridges are convenient for the user in low concentration environment, large waist mounted canisters should be selected for higher concentrations and/or longer durations.
4. Concentration of toxic gases shall be within the limits (usually 2%) specified on the canister. It shall not be used after expiry date or if the seal is found removed.
5. **Gas masks shall not be used for fire fighting or oxygen deficient atmospheres and in confined spaces.** In Immediately Dangerous to Life or Health [IDLH] atmosphere of toxic contaminants, full-face piece gas mask can be used for escape only.
6. The face piece shall be properly fitted to provide adequate seal around the face. Full-face piece shall be selected when the risk of eye or skin injury exists. Personnel required to use gas masks shall be properly trained for their use.
7. The masks shall be maintained in a hygienic and good condition, stored away from moisture, heat and direct sunlight and inspected regularly. Manufacturer's storage requirements shall be strictly followed.
8. Chemical cartridge respirator suitable to provide protection against paint vapor can be used during spray painting in open areas. Combination cartridges providing additional protection against airborne particulate matters are also available.

5.11.2 AIR SUPPLIED RESPIRATORS

A) GENERAL REQUIREMENTS

1. Users of air-supplied respirators shall be medically fit and thoroughly trained in their use. Medical certification shall be renewed yearly while refresher training shall be conducted every 2 years.
2. The equipment shall be inspected at least monthly and maintained in a good working condition. The hose shall be protected from damage and the face piece should be kept clean, disinfected and covered.
3. Air supply shall be capable of supplying **Breathing Quality Air** (Grade-D breathing air as per ANSI/CGA Commodity Spec. for air, G-7.1) with following properties.
 - Oxygen - 19.5% to 23.5%
 - Hydrocarbon (condensed) - 5 mg per cubic meter of air or less
 - Carbon monoxide - 10 ppm or less
 - Carbon dioxide - 1000 ppm or less
 - Odor - Lack of noticeable odor
4. Air supply may be obtained from breathing air cylinders, hand operated blowers, and non-oil-lubricated compressors or oil lubricated compressors with suitable safeguards.
5. Breathing air **cylinders** shall have suppliers certificate and refilled with above quality air. Moisture content shall be limited so that dew point of air does not exceed -50°F (-45.6°C). Cylinders shall be hydrotested every 5 years.
6. Air inlet to **compressor** shall be from uncontaminated location away from engine exhausts or other contaminations. Minimize moisture content so that the dew point at 1 atmosphere pressure is 10° F (5.6°C) below the ambient temperature.

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7. Compressor shall be equipped with approved in-line filter system, which shall be serviced and elements changed as per manufacturer's instructions. User shall provide proof of approval and maintenance record when applying for safety certificate.
8. A calibrated and tested regulator and gauge shall be used to monitor the pressure of air being supplied at the outlet valve of the compressor.
9. For compressors that are not oil-lubricated, user (KNPC executor) shall ensure that CO content in breathing air is below 10 ppm. This type of breathing air compressors should be used whenever possible.
10. Where **oil-lubricated compressors** are used the executing KNPC Division shall ensure use of high temperature and carbon monoxide alarms to monitor carbon monoxide levels. If only high temperature alarm is used, the air supply shall be monitored quarterly using lab test or portable CO monitors. KNPC Safety shall check CO level and documentation of filter system while certifying such compressors.

B) AIR LINE RESPIRATORS

1. Airline respirator consists of a half mask or full mask face piece connected to a source of fresh air through a hose. A portable air compressor, blower or battery of compressed air cylinders may supply breathing quality air to the hose. Plant air or oxygen shall never be used with airline respirators.
2. The length of hose of an airline respirator shall not exceed 300 feet (90m). The blower shall be capable of supplying 50 liters/min to each face piece through the maximum length of hose at not more than 50 rpm of the blower crank.
3. One person shall be specially assigned at all times to attend the blower/ compressor or cylinder battery.
4. In IDLH atmospheres, combination airline respirator with auxiliary self contained air supply or an air storage receiver (escape cylinder) with alarm shall be used. In confined spaces, user shall be equipped with a harness, lifeline and a retracting device. A trained attendant and rescue preplan shall be available (see Chapter-7 for details).

C) ABRASIVE BLASTING RESPIRATORS

1. Abrasive blasting respirators are used to protect personnel engaged in shot, sand or other abrasive blasting that involves air contaminated with high concentration of abrasive particles at high velocity.
2. In addition to respiratory protection, mechanical protection from the abrasive particles is needed for the head and neck. A common form of abrasive blasting respirator consists of a full-face piece made of rubber and an eyepiece made of impact resistance safety glass. This unit is attached securely to a cap and hood made of tough flexible rubber or rubber covered fabric.
3. Breathing quality air at minimum flow rate of 6 scfm shall be supplied to the hood from a compressor as detailed in above Section A. Compressors shall be attended at all times.
4. The air delivered to the mask shall be at a comfortable temperature.
5. The length of the hose shall not exceed 300 feet (90m) and care shall be taken to prevent physical damage e.g. by contact with sharp/hot objects or deterioration by contact with oil etc.

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D) SELF CONTAINED BREATHING APPARATUS

1. A Self-Contained Breathing Apparatus (SCBA) consists of a compressed air cylinder, full-face piece, air supply hoses, pressure regulator, pressure gauge and low-pressure alarm.
2. SCBA offers complete respiratory protection (usually for 30 minutes) in any toxic or oxygen deficient atmosphere, regardless of the concentration of the contaminant in addition to allowing for freedom of movement.
3. Regulator shall be pressure demand type, which maintains a slight positive pressure to avoid contaminated air leaking in to the face piece.
4. SCBA should be used in fire fighting and emergency work in an IDLH atmosphere. If the contaminant is a skin irritant, impervious clothing shall also be used.
5. On hearing low air pressure alarm, person using SCBA shall immediately leave the contaminated atmosphere to fresh air. Other trained person similarly equipped shall remain as stand-by or in attendance.
6. SCBA shall be properly maintained, stored and regularly inspected. A record for all inspection and maintenance shall be maintained.
7. SCBAs' shall be checked and logged at the user location for pressure of each cylinder on a daily basis. Only Safety Section shall do refilling, replacing, adjusting and repairing of any part of SCBA. User shall immediately report to Safety Section whenever an SCBA is used, for checking and refilling of the cylinder.

E) ESCAPE BA SET

1. Escape Set is a short duration version of the SCBA, which is able to provide full respiratory protection for 10 minutes to enable escape from a hazardous atmosphere.
2. Set shall be kept in its case under shade at a prominent location clearly and visibly marked. It shall be daily checked and logged. Area personnel shall be familiar with locations of escape sets.
3. It shall be carried on person when approaching a dangerous location and, user shall know how to wear it, in case of emergency.

F) SCUBA DIVING EQUIPMENT

1. Self Contained Underwater Breathing Apparatus (SCUBA) diving equipment shall meet US Navy Diving Manual requirements or equivalent.
2. These shall be well maintained with proper records and stored as per manufacturer's instructions.
3. Personnel wearing SCUBA shall be trained certified and "medically fit for diving". Medical certificate shall be renewed yearly.

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APPENDIX – A PPE SPECIFICATIONS OF KNPC

SR#	Protective Equipment	Spec. No.	Issue/Rev.
1a	Safety Shoes	PPE/PF/01	DEC 97
1b	Safety Boots	PPE/PF/02	DEC 97
1c	Safety shoes for women	PPE/PF/03	DEC 97
1d	High Safety Boots (Chemical handling, hydroblasting, tank cleaning, etc.)	PPE/PF/04	Being prepared
2a	Head Protection (Safety Helmet)	PPE/HP/01	DEC 97
2b	Welding protection (Welders helmet)	PPE/WP/02	NOV 97
2c	Sand blast hood	PPE/SH/01	NOV 97
3a	Protective Clothing (Coveralls - general use)	PPE/PC/01	DEC 97
3b	Protective clothing (Coveralls – fire retardant)	PPE/PC/02	SEPT 97
3c	Protective clothing (Disposable coveralls)	PPE/PC/03	prepared
3d	Welding protection (Protective clothing for welders)	PPE/WP/04	NOV 97
3e	Chemical Protective clothing (General Purpose)	PPE/CP/01	NOV 97
3f	Proximity suit	PPE/PS/01	NOV 97
3g	Tetra Methyl Lead (TML) Protective equipment	PPE/TP/01	NOV 97
3h	HAZMAT suit	PPE/HS/01	NOV 97
4a	Hand Protection (Hand Gloves – General Use)	PPE/HG/01	DEC 97
4b	Hand Protection (Hand Gloves – Chemical Handling)	PPE/HG/02	Prepared
4c	Insulation gloves for electrical use	PPE/GL/01	NOV 97
4d	Welding protection (Welders gloves & gauntlets)	PPE/WP/04	NOV 97
5a	Hearing protection (Ear Plug)	PPE/EP/01	SEP 97
5b	Hearing protection (Ear muff)	PPE/EP/02	SEP 97
6a	Eye & Face Protection (Face shield – general use)	PPE/EFP/01	JUL 97
6b	Eye & Face Protection (Face shield–furnace inspection)	PPE/EFP/02	JUL 97
6c	Eye & Face Protection (Spectacles – General Use)	PPE/EFP/03	DEC 97
6d	Eye & Face Protection (Goggles - General Use)	PPE/EFP/04	DEC 97
6e	Welding protection (Welder hood & accessories)	PPE/WP/01	NOV 97
6f	Welding protection (Welders goggles)	PPE/WP/03	NOV 97
7a	Fall protection system	PPE/FP/01	NOV 97
7b	Safety Net	PPE/FP/02	To be prepared
8	Life Jacket & Life Buoy	PPE/LSE/01	May 99
9a	Dust mask - Disposable type	PPE/DM/01	NOV 97
9b	Gas masks and Filter Cartridges	PPE/GM/01	NOV 97
9c	Respiratory Protection (SCBA)	PPE/BA/01	AUG 97
9d	Respiratory protection (Constant flow air-line)	PPE/BA/02	AUG 97
9e	Respiratory Protection (Escape sets)	PPE/BA/03	SEP 97
9f	Respiratory Protection (Air supplied mask)	PPE/BA/04	To be prepared

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APPENDIX-B RESPIRATOR SELECTION GUIDE

Respirator type	Self contained breathing apparatus	Air line Respirator	Combination self-contained & air-line respirator	Chemical cartridge respirator	Mechanical filter respirator – full face	Mechanical filter respirator – half mask	Combination chemical cartridge & mechanical filter	Self-rescue respirator (escape only)	Air-line abrasive blasting respirator
Atmosphere									
Oxygen deficiency (oxygen concentrations less than 19.5%)	X		X						
Gas & vapor contaminants immediately dangerous to life and health	X		X					X	
Gas and vapor contaminants NOT immediately dangerous to life and health		X		X					
Particulate contaminants immediately dangerous to life and health.	X		X					X	
Particulate contaminants NOT immediately dangerous to life and health		X			X	X			X
Combination gas and vapor and particulate contaminants immediately dangerous to life and health.	X		X						
Combination gas and vapor and particulate contaminants NOT immediately dangerous to life and health		X					X		
Fire fighting.	X								