

Environment, Health & Safety

Levi Strauss & Co. has prepared this Environment, Health and Safety (EHS) chapter to help our business partners meet our Social and Environmental Sustainability requirements. EHS requirements are no less important than meeting our quality standards or delivery time.

Importance of Meeting Requirements

One of our requirements for Health and Safety focuses on emergency preparedness. Several years ago, one of our factories in central Mexico installed additional emergency exits and conducted evacuation drills to comply with this requirement. Four months later, a massive earthquake occurred.

The factory's recent efforts to fulfill requirements ensured that its 800 employees were able to evacuate quickly and safely. As you can see, careful attention to meeting our requirements is critical to providing a safe and health working environment for your employees.

Using this Chapter

We have prepared this chapter to help you meet Levi Strauss & Co.'s EHS requirements, but we do not herein identify all circumstances which might constitute "findings" in a TOE Assessment. Rather, we address topics which are of particular importance. Each business partner must make a careful assessment of each of its workplaces to determine what measures to put in place to meet our requirements, and, of course, the requirements of the countries where it operates. To help our partners with this site-specific analysis, we not only include specific information in this Handbook, but we also identify where additional information may be found regarding each requirement.

Each of the EHS topics in this chapter is organized into four sections: Application, Purpose, Requirements, and Implementation of Requirements. **Please note that LS&Co. will hold its business partners accountable for those items identified as "Requirements" only.** The sections labeled "Implementation of Requirements" provide examples of ways to comply with the requirements. These sections close with a "Plan-Do-Check-Act" cycle, illustrating a sample strategy for implementing a specific EHS program — for example, emergency preparedness, electrical safety, etc. This strategy will help business partners integrate their EHS programs into an EHS management system.

Finally, we encourage our business partners to pay close attention to the documentation and record keeping requirements. LS&Co. assessors rely on written records to verify that business partners meet requirements such as: having established EHS procedures, conducting regular inspections, and training workers.

Application

This information applies to all factories covered by Sustainability for LS&Co., unless otherwise noted.

Finishing Guidelines

Levi Strauss & Co.



Finishing Safety Guidelines

Application

The finishing safety guidelines apply to all factories that finish/laundry garments for Levi Strauss & Co. using any of the following processes.

Background

Finishing of garments involves a variety of physical and chemical processes that give garments a desired appearance (e.g., faded, tinted, vintage) or quality (e.g., wrinkles, whiskers, water repellent, stain repellent).

Purpose

The purpose of this section is to ensure that factories have controls in place to protect employees who are involved with the finishing process. Finishing factories are required to meet all of the following requirements for each of the listed processes undertaken at the factory:

The following processes are covered in this section:

- **Hand scraping** is a process of manual abrasion of fabric or garment by hand, using abrasive paper (also called sand paper or emery paper) or power tools. This process imparts a 'distressed' or 'worn-out' look to the denim garment. Hand scraping includes, but is not limited to, scraping, handwork and whiskering.
- **Laser Etching** uses a laser beam that burns away the blue coloring, thus producing a faded look or creating patterns such as lines, dots, text or even pictures on a garment.
- **Curing and drying** is the process of heating the garment in a hot air-circulated oven (electrical, steam, oil or gas-fired, solar lamps) for a pre-set period of time at a defined temperature.
- **Dipping and sponging** involve applying potassium permanganate solution or other bleaching agents with a sponge or by dipping the garment to achieve tints, bleach or color effects on the garment.
- **Ozone treatment** involves treatment of the garment with ozone to create a bleached effect or create a 'greyish cast' on washed denim garments to give them a worn-out look.
- **Resin treatment** is the application of a chemical resin solution by spray or dip method, followed by a curing process in a batch or continuous manner using a flasher or a continuous curing chamber. The process creates creases (3D effect) at specific places on the garment that are fast even after multiple home launderings. Effects such as contrast effect, cloudy effect and vintage look can be obtained by the dip method.
- **Panel or Screen Printing** is a process in which inks (pigments and print base) are mechanically applied to a garment to produce a design or logo. The print is then dried and cured under heat.
- **Spraying** involves applying potassium permanganate solution through a hand spray gun for bleach effects on denim garments. This process is also used for tinting garments with pigments at localized areas.

Hand Scraping

Background

Hand scraping is a process involving manual abrasion of the fabric or garment, using abrasive paper (also called emery paper) or electrical/pneumatic abrasive power tools. This process imparts a 'distressed' or 'worn-out' look to the denim garment. Hand scraping includes also whisker/moustache and all other manual abrasive effects.

Purpose

The purpose of this section is to provide health and safety guidance for workers conducting hand scraping.

Potential EHS Issues

1. Scraping can generate airborne dust (e.g., from emery paper particles) which may include tiny fibers/lint which in turn can become a respiratory issue.
2. The use of an abrasive power tool can cause physical injury.
3. Improper ergonomic design or set-up of the work station or the equipment can lead to musculoskeletal disorders for workers.

Requirements

Abrasive paper

ZTV The Safety Data Sheet for each abrasive paper must be carefully reviewed by each worker conducting hand scraping, and the abrasive paper must be free of crystalline silica and asbestos.

IA The worker shall not use an abrasive paper unless the Safety Data Sheet for that abrasive paper states that the only abrasive materials present are:

- aluminum oxide	- polycarbonate
- aluminum shot	- silicon carbide
- ambient polycarbonate	- stainless cast shot
- apricot pits	- stainless cut wire
- corn cobs	- steel grit
- cryogenic polycarbonate	- steel shot
- emery	- urea plastic
- garnet	- walnut shells
- glass beads	- wheat grain
- melamine plastic	- white aluminum oxide
- novaculite	- zircon

Personal Protective Equipment

- IA When mechanical tools are in use, safety glasses and protective gloves shall be worn.
- IA The Industrial Hygiene section of the LS&Co. Sustainability Guidebook shall be reviewed to identify whether PPE use is needed (e.g., for hearing and inhalation protection) and PPE must be provided accordingly.
- IA A hand/body washing facility shall be accessible to workers at all times.

Housekeeping

- IA Workers must be instructed to clean the work area regularly and carefully and to direct particles away from other workers while cleaning.
- IA The work room must have sufficient ventilation to reduce airborne dust particles and provide sufficient balanced air exchange.
- IA Power tools must regularly be cleaned, maintained and inspected.
- IA Regular and scheduled clean-up and housekeeping must include high ceiling pipes, lighting armatures and all other areas in the workplace.

Ergonomics

- IA The vertical mannequin shall be positioned between the standing worker's elbow and shoulder and the horizontal mannequin shall be positioned between the standing worker's waist and elbow.
- IA Periodic rest breaks are required.
- IA Standing operators shall be encouraged to sit during rest breaks.
- IA Training must be provided to all workers regarding proper hand scraping practices, and written records of such training must be prepared and retained.
- IA Periodically conduct general medical tests for workers for respiratory health.

Laser Engraving

Background

A laser is a highly intense beam applied on a garment to fade dyes, giving the garment a worn and abraded appearance. The laser beam is focused through a lens producing the faded look or creating patterns such as lines, dots, text or even pictures on a garment.

Purpose

The purpose of this section is to provide health and safety guidance for workers conducting laser operations

Potential EHS Issues

1. Electrocution from improper use of lasers associated with high voltage.
2. Permanent eye injury from exposure of eyes to highly concentrated energy emitted from lasers and reflections.
3. Skin injury from acute exposure or direct contact with the laser beam or specular reflections.
4. Inhalation of fumes generated by laser energy
5. Fire due to the high energy and temperature associated with the laser process.

Requirements

Engineering Controls

- IA** The laser must have a protective housing with appropriate interlocked controls to prevent unauthorized personnel or accidental entry to the area where the laser is in operation.
- IA** Physical barriers must be in place to prevent a worker from being hit by moving parts of the machine.
- IA** An Emergency Stop must be provided and must be easily accessible.
- IA** The factory must ensure that the laser machine is protected from unauthorized use.
- IA** Fire extinguishers shall be installed where laser operations are being conducted and operators shall be trained on their proper use.
- IA** Factory shall ensure that exhaust ventilation removes fumes from the working area.
- IA** Factory shall have on site a trained and authorized laser machine maintenance technician.

- IA Remove inflammable or combustible gases, liquids or solids which can be ignited by the radiation from the laser beam.
- IA Some materials, such as metals or plastics, can release toxic decomposition products when treated with a laser beam. Investigate the hazards associated with the materials which have to be processed. This kind of information can be obtained from the material supplier.
- IA Make sure that all objects which may reflect the laser beam accidentally are removed from the laser area.
- IA The working zone shall be shielded, for example, for CO2 laser with acrylic or polycarbonate.
- IA The laser beam must never be turned on without a target (garment) to absorb the energy.
- IA For fire safety precautions, do not attempt to treat a material with a laser beam unless the heating characteristics of the material have been investigated thoroughly and fully understood.
- IA The area around the laser and its power sources must be kept dry.

Administrative controls

- IA Only trained personnel shall be permitted to operate laser equipment.
- IA Factory shall maintain and operate laser systems as per manufacturer's recommendations.
- IA Laser equipment or machine when not in use must be switched off.
- IA For the table- type laser machine, the operator must not wear any rings, metallic watchbands and other metallic objects.

Warning Signs and Labelling Requirements

- IA All access doors to rooms that house laser equipment shall be posted with a signboard having the laser symbol (sunburst). Be sure all employees know what the sunburst signifies.
- IA The laser health and safety requirements and the laser machine operation manual shall always be kept near the laser machine and available to operators for review.

Personal Protective Equipment

- IA** Safety glasses which are specifically designed for protection against the emitted wavelength of the laser shall be provided (regular glasses do not give protection) and kept in good condition.

- IA** If not identified in the laser machine operator's manual, the factory shall contact the laser machine manufacturer to select the correct type of safety glasses used by the factory's laser machine operators.

Spraying

Background

Spraying involves applying potassium permanganate solution, bleaching agents, or tints through a hand spray gun for bleach or color effects on denim garments.

Tinting in denim garments involves spraying pigments along with requisite amount of binder and acid catalyst on the desired area of the garment to achieve a particular cast. After application, the tints are cured to create a permanent effect on the garment (please refer to the curing section).

Resin treatment can be carried out on a garment by spraying. The resin is then fixed by a batch curing process, solar lamps, or a continuous curing chamber to produce a coating on the garment that imparts the desired effect or property (e.g., creases; 3D effect).

Purpose

The purpose of this section is to provide health and safety guidance for workers conducting spraying operations.

Potential EHS Issues

1. Certain substances may spread throughout the workplace during spray application and can result in respiratory issues and/or skin irritation.
2. Chemical droplets can cause eye irritation.
3. Noise from use of high pressure tools involved in spraying.
4. Chemical build up on the different parts of the system can result in fire
5. Some type of pneumatic spraying systems can explode if proper maintenance and cleaning is not carried out
6. Improper ergonomic design or set-up of the work station or the equipment can cause like Musculo-skeletal disorders (MSD).
7. Spray particles and waste water discharge can cause environmental exposure as certain substances can be harmful for the environment.

Requirements

The following control measures must be in place:

- IA** Factory shall ensure that workers are protected adequately from chemicals during application by spraying.
- IA** The Industrial Hygiene section of the LS&Co. Sustainability Guidebook shall be reviewed to identify whether PPE is needed (e.g., for hearing and inhalation protection).
- IA** Factory shall provide work wear for workers working in spraying operation.
- IA** A hand/body washing facility shall be accessible to workers at all times.

- IA Solutions required for the spraying process must be mixed in a well-ventilated area.
- IA The Chemical Management section of the LS&Co. Sustainability Guidebook shall be followed in all respects, including the proper storage of spraying chemicals.
- IA Provide adequate ventilation in the work area.
- IA All Safety Data Sheets for chemicals used in the process shall be made known to workers, be readily available, and be carefully read by the workers to ensure that adequate protections and precautions are taken (e.g.: ventilation, PPE).
- IA A safety shower and eye wash facility shall be available where chemicals are applied.
- IA Adequate safety gloves shall be used as specified by the Safety Data Sheet or as otherwise required by the work conditions (sharp objects, long enough for the process, etc.).
- IA Factory shall provide safety glasses for spray operation as required in the Safety Data Sheet.
- IA Fire extinguishers shall be readily available where spraying operations are conducted and spraying operators shall be trained on their proper use.
- IA Factory shall regularly check the cleanliness of the exhaust pipes and fans to address fire risk and keep sufficient exhaust ventilation flow.
- IA Factory shall make sure that all containers and jars are properly labelled, including warning signs regarding chemical content and associated hazards.
- IA The factory shall allow only trained personnel to operate spraying equipment.
- IA Periodically conduct medical tests for workers that handle spraying chemicals.
- IA The vertical mannequin shall be positioned between the standing worker's elbow and shoulder and the horizontal mannequin shall be positioned between the standing worker's waist and elbow.
- IA Periodic rest breaks are required.
- IA Standing operators shall be encouraged to sit during rest breaks.

- IA Factory shall ensure that air and water emissions from the spray operations are filtered to avoid environmental pollution.

Curing

Background

Drying and curing is the process of heating the garment in a hot air-circulated oven (electrical, steam, oil or gas-fired, solar lamps) for a pre-set period of time at a defined temperature.

Purpose

The purpose of this section is to provide health and safety guidance for workers involved in the curing process.

Potential EHS Issues

1. Certain substances used during the curing process can result in respiratory issues and/or skin irritation.
2. Hot surface in curing can burn skin.
3. High temperature in the working environment.
4. Fire is possible because of high temperature in the curing process.
5. Explosion is possible due to improper use of fuel gas/oil or due to increased pressure in a closed and poorly-ventilated chamber.
6. Air pollution can cause environmental exposure as certain substances can be harmful for the environment.

Requirements

- IA** An Emergency Stop must be provided and must be easily accessible.
- IA** Factory shall ensure that batch type curing machine has escape exit installed.
- IA** Factory shall ensure that hot parts of the curing oven are highlighted/signed.
- IA** Factory shall ensure adequate ventilation in the curing area.
- IA** Factory shall ensure that exhaust ventilation eliminates fumes from the work area of the curing process
- IA** Factory shall regularly check the cleanness of the exhaust pipes and fans to address fire risk and keep sufficient exhaust ventilation flow.
- IA** Fire extinguishers shall be available in areas where curing operations are being conducted and operators shall be trained in their proper use
- IA** Factory shall ensure proper gloves are worn to protect hands from hot parts of the machine and hangers.

- IA The Industrial Hygiene section of the LS&Co. Sustainability Guidebook shall be reviewed to identify whether PPE use is needed (e.g., for inhalation protection) and PPE must be provided accordingly.
- IA Regarding oil or gas-fired curing chambers, the gas burner shall be checked regularly for health and safety and environmental protection by specialized personnel.
- IA Factory shall provide adequate safety glasses for solar curing operation if these are identified in the manual. If not, contact solar manufacturer for advice.
- IA Flammable or combustible gases, liquids or solids can be ignited by the radiation from the curing process. Remove all these materials from the curing area.
- IA The factory shall allow only trained personnel to operate of curing equipment.
- IA Data-logging equipment must be used to verify actual temperature on garment being cured in the chamber. This ultimately prevents overheating of garment and protects against fire risk.
- IA Factories shall ensure periodic maintenance plan for ovens and all critical operations controls shall be checked during the maintenance activity.

Dipping and Sponging

Background

Dipping and sponging involve applying potassium permanganate solution or other bleaching agents with a sponge or by dipping the garment to achieve tints, bleach or color effects on the garment.

Tinting in denim garments is done by sponging pigments along with the requisite amount of binder and acid catalyst on the desired area of the garment to achieve a particular cast. After application, the tints are cured to achieve a permanent effect on the garment (please refer to the curing section).

Purpose

Purpose of this section is to provide health and safety guidance for workers involved in sponging and dipping operations.

Potential EHS Issues

1. Certain substances employed during sponging or dipping can result in respiratory issues and/or skin irritation.
2. Chemical droplets can cause eye irritation.
3. Improper ergonomic design or set-up of the work station or the equipment can cause musculoskeletal disorders.

Requirements

The following control measures must be in place:

- IA** The Industrial Hygiene section of the LS&Co. Sustainability Guidebook shall be reviewed to identify whether PPE use is needed for inhalation protection. PPE must be provided accordingly.
- IA** Factory shall provide work wear for workers working in sponging and dipping operation.
- IA** A hand/body washing facility shall be accessible to sponging and dipping workers at all times.
- IA** Solutions required for the sponging or dipping process must be mixed in a well-ventilated area.
- IA** The Chemical Management section of the LS&Co. Sustainability Guidebook shall be followed in all respects, including regarding proper storage of the sponging or dipping chemicals.

- IA Factory shall provide adequate ventilation in the work area.
- IA All Safety Data Sheets (SDS) of chemicals used in the process shall be available and analyzed to ensure that adequate protections and precautions are taken (e.g. ventilation, gloves, mask, etc.).
- IA A safety shower and eye wash facility shall be available where chemicals are applied.
- IA Factory shall make sure that all containers and jars are properly labelled, including warning signs of the chemical content and associated hazards.
- IA The factory shall allow only trained personnel for the operation of sponging or dipping.
- IA Periodically conduct medical tests for workers that perform sponging or dipping operation.
- IA Standing operators shall be encouraged to sit during rest breaks.

Screen printing

Background

Screen printing is a process in which inks (pigments and print base) are mechanically applied to a garment. This process is used for the application of a design or logo onto garments. After application of the ink, the print is dried and cured using a tunnel- type curing oven, hot press, flasher or similar equipment at elevated temperatures.

Different kinds of print bases are available for screen printing:

- PVC based (plastisol)
 - Phthalate – free
- Water based (acrylic acid)
- Silicone based

These bases are blended with colored pigment. In addition, auxiliary chemicals such as catalysts, fixers, reducing agents (for discharge effects), and solvents are incorporated in the formulations, depending upon the printing effects desired.

Purpose

The purpose of this section is to provide health and safety guidance for workers involved in screen printing operations.

Potential EHS Issues

- Certain substances used during screen printing can result in respiratory issues and/or skin irritation.
- Chemical droplets can cause eye irritation.
- Hot surface of curing technique can cause skin burning.
- Curing process can cause fire hazard due to high temperature process.
- Rotating parts can cause injury.

Requirements

The following control measures must be in place:

- IA** The Industrial Hygiene section of the LS&Co. Sustainability Guidebook shall be followed to identify whether PPE use is needed for inhalation protection. If so, provide PPE accordingly.
- IA** Factory shall provide work wear for workers working in screen printing operation.
- IA** Factory shall provide workers all time accessible hand/body washing facility.
- IA** Solutions required for the paste preparation must be carried out in a well-ventilated area.

- IA The Chemical Management section of the LS&Co. Sustainability Guidebook shall be followed to properly store the printing chemicals.
- IA Factory shall provide adequate ventilation in the work area.
- IA Factory shall ensure that exhaust ventilation eliminates curing fumes from the work area of the curing process to avoid exposure to workers.
- IA All Safety Data Sheets (SDS) for chemicals used in the process shall be available and analyzed to ensure that adequate protections and precautions are taken (e.g. ventilation, gloves, mask, etc.).
- IA A safety shower and eye wash facility shall be available where chemicals are applied.
- IA Factory shall make sure that all containers and jars are properly labelled, including warning signs regarding the chemical content and associated hazards.
- IA The factory shall allow only trained personnel for operation of screen printing.
- IA Periodically conduct medical tests for workers that perform screen printing operation.
- IA Standing operators shall be encouraged to sit during rest breaks.
- IA Factory shall make sure that hot parts of the curing oven are highlighted/signed.
- IA Fire extinguishers shall be placed in the area of curing machine and operators are trained for its proper use.
- IA Flammable or combustible gases, liquids or solids which can be ignited by the radiation from the curing process shall be removed from the curing area.

Abrasive Blasting

Purpose

Levi Strauss & Co. has implemented a global ban on abrasive blasting. As of September 8, 2010, LS&Co. stopped placing new orders for sandblasted products and as of December 31, 2010, LS&Co. no longer had any active production that uses this finishing technique.

Requirements

- ZTV** LS&Co. bans all forms of abrasive blasting including, but not limited to, the use of aluminum oxide, aluminum silicate, silicon carbide, copper slag and garnet. LS&Co. suppliers must remove all equipment and abrasive materials from their manufacturing site.

Ozone

Application

This information applies to all factories covered by the Sustainability program for Levi Strauss & Co.

Background

Some factories use ozone as a bleaching agent in the fabric or garment finishing process. Ozone generators use an electrical current to charge oxygen molecules in the incoming air and produce ozone. Ozone is an irritant gas and may cause health effects that range from irritation of the eyes, nose, throat and chest to severe injury. Ozone is also a strong oxidizing agent and may pose a fire or explosion hazard under certain circumstances.

Purpose

The purpose of this section is to explain the safety requirements for ozone generators and associated equipment to prevent accidents, injuries and/or illnesses that could result from exposure to ozone gas. The requirements set out below shall be followed for each ozone finishing installation at each manufacturing facility to achieve the LS&Co. required 3 level safety: 1, isolation 2, ventilation 3, detection.

Requirements

Ozone Generator Safety

- IA** Factory shall isolate ozone generators from the rest of the factory by enclosing them in their own room by using a physical cover (e.g. brick, glass or polycarbonate walls...etc.).
- IA** The ozone Generator room shall have exhaust ventilation linked to outside.
- IA** Factory shall equip areas in which ozone generators are located with an ozone monitor and an audible and visual alarm that will alert if ozone level exceeds 0.3 ppm.
- IA** The ozone generator shall have at least 2 shut off switches:
 - On the generator
 - Outside of the ozone enclosed area
- IA** Equipment associated with the ozone generator (such as pipes, pipe connectors, and clamps) shall be made of ozone-resistant materials and must be strong enough to withstand the pressure generated by the ozone finish process.

- IA Connection pipes between generator room and ozone treatment equipment shall be enclosed through use of a rigid tube/channel for physical protection.
- IA All sensors in the system shall be kept switched on at all times when the ozone generator is in operation (e.g., if generator is supplying only one washer out of several, – sensors should not be turned off on any machine).

Ozone Finishing Equipment Safety

- IA Factory shall isolate ozone equipment (except vacuum-type machine) from the rest of the factory by enclosing it in a separate room by using a physical cover (e.g. brick, glass or polycarbonate walls...etc.).
- IA Factory shall isolate integrated ozone equipment (when washer and generator built in one piece) from the rest of the factory by enclosing it in a separate room by using a physical cover (e.g. brick, glass or polycarbonate walls...etc.).
- IA The ozone Finishing Machine room shall have exhaust ventilation linked to outside to suck air away from the work area. The ventilation can stop only if the whole installation is switched off (all generators and washers).
- IA Negative pressure ozone finishing machine shall be equipped with an exhaust ventilation to maintain constant negative pressure inside the machine. The ventilation can stop only if the whole installation is switched off (all generators and washers).
- IA The control panel of the ozone machine shall be visible from outside the ozone machine room (or be installed outside) and factory shall make sure that operator is not staying inside the room during the ozone treatment process.
- IA Excess or exhaust ozone shall be ventilated through an ozone-destruct unit. The ozone-destruct unit may use either thermal/steam or catalytic conversion technology and must destroy ozone.
- IA Final discharge after destructor shall go through a vertical chimney high enough to avoid human exposure.
- IA Final discharge after destructor to the environment shall be monitored to identify when destructor needs to be maintained and to verify that the unit is capable of destroying the amount of ozone moving through it.
- IA Ozone concentration inside the ozone chamber shall be monitored to ensure the machine is locked until the ozone is at or below 0.2 ppm.

- IA** Factory shall also install an ozone monitor and audible and visual alarm close to the washer door to alert for immediate evacuation from that area if ozone levels exceed 0.3 ppm.
- IA** Pipes, connectors, sealants and clamps shall be made of ozone-resistant materials (e.g., stainless steel connectors for tubing). Note: this is applicable for all parts.
- IA** Second door and dosing system on washer shall have automatic lock so it cannot be opened.
- IA** Factory shall evaluate ozone exposures to workers on regular basis by performing an official work environmental survey.
- IA** Flammable or combustible materials shall not be stored in the same room as the ozone generator.
- IA** Factory shall have at least one Self-Contained Breathing Apparatus (SCBA) available for emergency use.
- IA** Factory shall have an air-purifying, full-face piece respirator (gas mask) with a chin-style, front or back mounted canister providing protection against ozone. Only monoxidizable sorbents are allowed (not charcoal).
- IA** The safety features of the machine, including the computer program, shall be protected and modified only with the agreement of the ozone machine manufacturer and the concurrence of LS&Co.
- IA** In case any safety button is pushed, the generator shall be stopped and destruction process shall start up at each washer.
- CI** Employees shall be trained annually on the hazards of ozone gas and on the need to stay out of (or evacuate) the ozone installation area if the alarm has been triggered.
- CI** Factory shall have written standard operating and maintenance procedures for safely operating the ozone installation in local language.
- CI** Machine shall be labelled in a language understood by operators and maintenance personnel.



Full-face piece respirator (gas mask) with a chin-style front or back mounted canister for escape

- CI All ozone- related documentation should be available to Assessors for review.

Implementation of Requirements

Training, Rules and Record Keeping

- Factory shall train operators and maintenance staff annually regarding the hazards of ozone gas and regarding the equipment use and safety controls in place.
- Factory shall keep written records to show ozone safety training has been completed.

Hazard Controls

- Factory shall periodically calibrate and maintain the ozone- monitoring equipment to make sure that it works properly and provides accurate information about ozone levels. Factory shall follow ozone sensor manufacturer's written instructions.
- Factory shall periodically test and maintain the ozone alarms to ensure they are working properly.
- The safety visual and audible alarm signal must be easily distinguished from process alarms.
- Factory shall periodically maintain self-contained breathing apparatus (SCBA). Factory shall follow SCBA manufacturer's instruction.



SCBA for emergency or planned entry into unknown concentrations or IDLH (Immediately Dangerous to Life or Health) conditions