1.0 POLICY/PURPOSE

Santa Barbara Applied Research, Inc. ensures its work force is properly protected from harmful airborne contaminants by implementing an effective respiratory protection program. Further, employees are provided respirators, medical evaluations and other requirements of the respirator standard at no cost to them. This WI establishes the respiratory protection program for SBAR, Inc.

2.0 SCOPE

Applies to all SBAR, Inc., operations were personnel are exposed to airborne contaminants.

3.0 REFERENCES AND DEFINITIONS

3.1 References

ISO 9001: Quality Management Systems-Requirements, Third Edition (2000-12-15)

- ISO 9001, 4.2.1(d): Documents
- ISO 9001, 7.5.1: Control of Production and Service Provision

CFR 1926.103: Respiratory Protection

T8 CCR 5144: Respiratory Protection (Cal/OSHA respiratory protection program)

Various state OSHA respiratory protection programs

3.2 Definitions

Airborne Contaminants: Biological hazards, gas, vapors, and particulate compounds that pose an inhalation health risk.

Biological Hazard Contaminants: Compounds generated from plants, animals, or their products that pose a human health risk (e.g., Legionnaire's Disease).

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Gas and Vapor Contaminants:

Acidic: Substances that are acids or react with water to produce an acid. They taste sour and many are corrosive to tissues (e.g., hydrogen chloride, sulfur dioxide, hydrogen cyanide).

Alkaline: Substances that are alkalies or that react with water to produce an alkali. They taste bitter and many are corrosive to tissues (e.g., ammonia, amines, phosphine).

Hydrides: Compounds in which hydrogen is chemically bonded to metals and certain other elements (e.g., diborane and tetraborane).

Inert: Substances that do not react with other substances under most conditions; however, they create a respiratory hazard by displacing air and producing oxygen deficiency (e.g,, nitrogen, helium, neon, argon).

Organometallic: Compounds I which metals are chemically bonded to organic groups (e,g., ethyl silicate, tetraethyl lead).

Particulate Contaminants: Airborne chemicals/materials that, if in sufficient concentration, pose a health risk. These contaminants include dusts, fog, fumes, mists, smoke, and spray.

Dust: Solid particles generated by handling, crushing, grinding, rapid impact, detonation, and breaking-up of organic or inorganic materials, such as rock, ore, metal, coal, wood, and grain.

Fog: A mist of sufficient concentration to at least partially obscure vision.

Fume: Airborne particulate formed by the evaporation of solid materials, e.g., metal fume emitted during welding.

Mists: Suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into a dispersed state, such a by splashing, foaming, or atomizing. Mist is formed when a finely divided liquid is suspended in air.

Smoke: Airborne particles (usually, will partially obscure vision) resulting from combustion or chemical reaction of substances in the form of visible and invisible solid and liquid particles and gases.

Spray: A liquid, mechanically produced particles with sizes generally in the visible or macroscopic range.

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Air Purifying Respirators (APR): A breathing unit with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

Cal/OSHA: California Occupational Safety and Health Administration. Cal/OSHA is the California agency that promulgates and enforces state safety standards for general industry, construction, etc. Cal/OSHA, along with OSHA and the Air Force, has concurrent jurisdiction over safety issues south of Honda Ridge on VAFB.

Emergency Life Support Apparatus (ELSA): A five minute emergency escape breathing air unit.

Environmental Health and Safety (EH&S) Office: The SBAR staff agency responsible for safety and environmental programs. Normally, this function is performed at the contract level.

Escape-Only Respirator: A breathing unit intended to be used only for emergency exit.

Hooded Demand Valve (HDV): A 15-minute emergency escape breathing air unit.

OSHA: Occupational Safety and Health Administration. OSHA is the federal agency that promulgates and enforces national safety standards for general industry, construction, etc. It is commonly referred to as "Federal OSHA" or "Fed OSHA." OSHA, along with the Air Force, has exclusive jurisdiction over safety issues north of Honda Ridge on VAFB.

Physician or Other Licensed Health Care Professional (PLHCP): A doctor or health care professional who has been authorized to medically screen personnel to wear respirators.

Self-Contained Breathing Apparatus (SCBA): A type of respirator that provides fresh air to the wearer.

4.0 RESPONSIBILITIES

4.1 SBAR Quality Manager

The Quality Manager is responsible for this WI.

4.2 Program/Contract Manager

Program/Contract Managers are responsible for implementing an effective respiratory protection program for their programs/contracts when harmful airborne contaminants are present.

4.3 Environmental Health and Safety Specialist (EH&SS) or Equivalent

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The EH&SS:

- Serves as the Qualified Respirator Program Administrator for SBAR employees.
- Refers to the applicable OSHA references (e.g., OSHA 1910.134, 42 CFR part 84, 30 CFR part 11 29 CFR 1926.103, T8 CCR 5144, and appendices) for the details necessary to administer a successful respiratory protection program.
- Ensures a viable respiratory protection program is administered IAW regulatory requirements.
- Ensures a competent PLHCP is available for medical screening of SBAR respirator wearers.
- Ensures subcontractors, as applicable, have viable respiratory protection programs as required by federal and state OSHA requirements.
- The EH&SS verifies all program requirements are compliant with existing regulatory standards and this WI, if fit testing, respiratory training, or any other respiratory protection program requirements are conducted by an organization other than SBAR.
- Reviews all Task Assignment, Work Request, Delivery Orders, etc. Statements of Work (SOW) and ensures appropriate respiratory protection requirements are listed in those SOWs.
- Conducts follow-up to ensure compliance when respiratory protection requirements have been identified in a contract SOW.
- Publishes contract specific WIs to supplement this corporate WI, when necessary.

4.4 Subcontractors

When required, subcontractors provide their own respiratory protection program IAW federal and state OSHA requirements.

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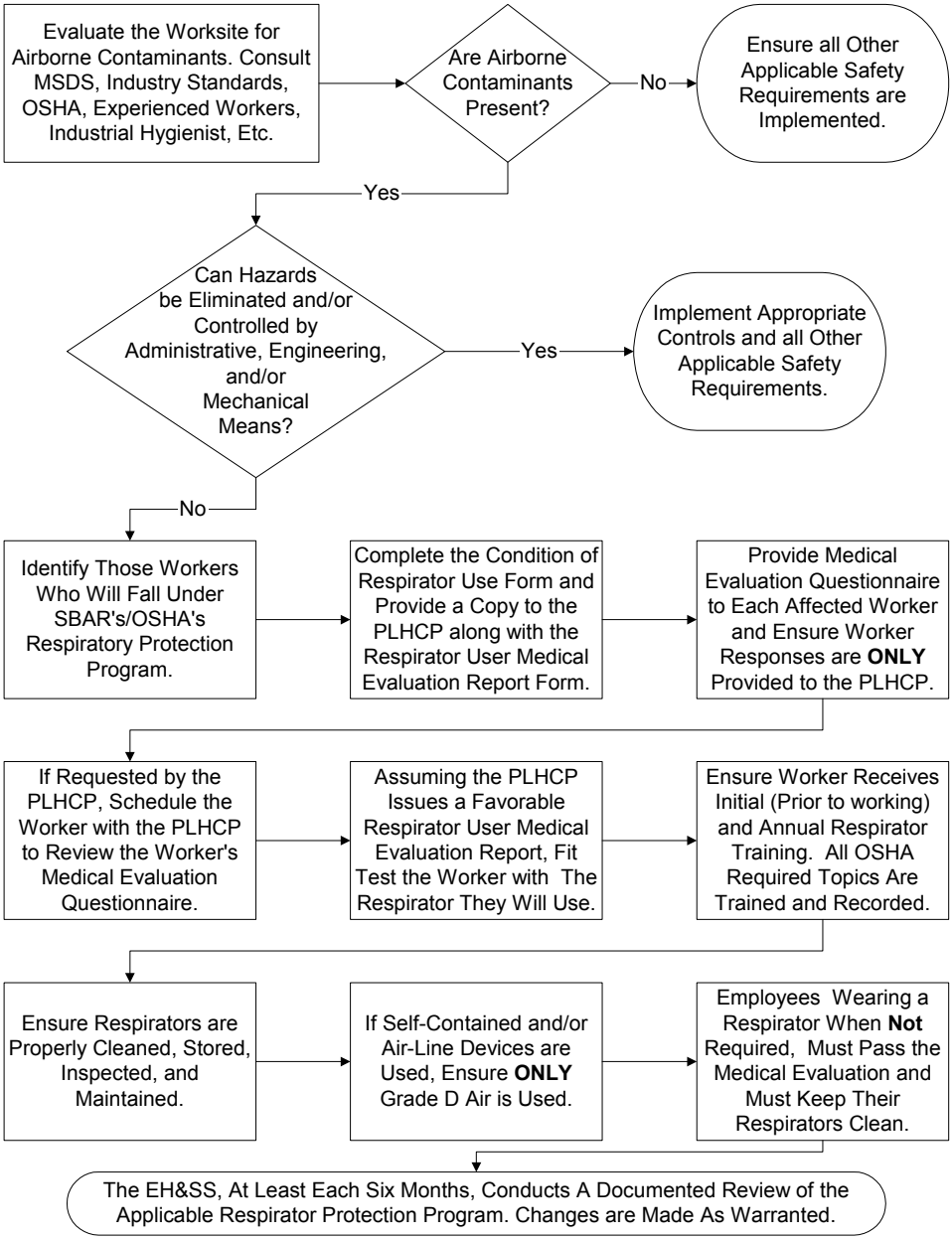
5.0 REQUIREMENTS/PROCEDURES

Figure 1 - Process Flow for Respiratory Protection Program



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5.1 General

The following is a listing of all SBAR personnel and operations were OSHA and Cal/OSHA respiratory protection requirements are applicable:

Contract	Position/Work Classification	Respirator Type (s)
LO&SC	EG&G painters (daily corrosion control)	Cartridge (1/2 & full face mask), Breathing Air
LO&SC	Technicians (Cooling Tower Maintenance)	APR (Half Face) with HEPA Filter
LO&SC	SVPP operators (Space launch over flight)	SCBA
LO&SC	Other subcontractors (job specific)	Job specific by SOW
LO&SC	SLC-3/SLC-4	*Emergency escape respirators

*In order to receive a safety badge for SLC-3 and SLC-4, LO&SC personnel must first receive annual ELSA and HDV training offered by the USAF. ELSA and HDV are emergency escape respirators for use with rocket propellants.

5.2 Medical Evaluations

All employees who are assigned to wear respirators (except for employees who voluntarily use filtering dust masks) are provided and receive a medical evaluation initially upon assignment of the respiratory protection device and periodically thereafter as directed by a physician or other licensed health care professional (PLHCP). Medical evaluations are conducted using the following procedures:

- Employees complete a *Respirator Medical Evaluation Questionnaire (Form CP-00-7000-04-A).* The EH&SS provides assistance in preparing the questionnaire; however, SBAR does not review the information recorded on the questionnaires. Further, the EH&SS provides the completed questionnaire, in a sealed envelope, to the PLHCP along with the *Condition of Respirator Use (Form CP-00-7000-04-B)* and a blank *Respirator User Medical Evaluation Report (Form CP-00-7000-04-C).*
- If required by the PLHCP, employees are scheduled for examinations with the PLHCP. In either event, the PLHCP provides a completed *Respirator User Medical Evaluation Report* or its equivalent, directly to the EH&SS.
- Employees are then assigned to respirator use positions, e.g., SVPP launch overflight operations, based on the results of the medical evaluation.

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- Periodic medical evaluations are based on the PLHCP's recommendation or whenever an employee answers any questions 1 through 8 in Section 2 Part A of the *Respirator Medical Evaluation Questionnaire* positively.
- Finally, the employer (SBAR) provides powered air-purifying respirators to any employee when the PLHCP recommends such equipment.

5.3 Fit-Testing

The following procedures are followed:

- Fit testing is performed using the following fit-testing method or methods according to the standard and the relevant appendix or appendices to the standard:

Fit Test Method(s)	Protocol (Appendix to standard)
Quantitative Fit Test Method	OSHA 1910.134, 29 CFR 1926.103, T8 CCR 5144, and appendices
Qualitative Fit Test Method	OSHA 1910.134, 29 CFR 1926.103, T8 CCR 5144, and appendices

- Employees are fit-tested wearing all respirators currently assigned, e.g., APR, SCBA. If a satisfactory fit test cannot be achieved, the employee is provided a different size, or different brand of respirator until an adequate fit is obtained.
- No tight fitting respirators are allowed to be fit-tested on any employee whose facial hair or other condition interferes with the respirator's sealing surface.
- Fit-testing is documented with an *Employee Annual Respirator Fit-Test and Training Record (Form CP-00-7000-04-D)* (or similar form) that is maintained and updated on an annual basis.

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5.4 Training

Employees assigned to wear respirators are provided initial and annual refresher training at or about the time of fit testing. (**NOTE**: Personnel are not allowed to wear a respirator until they have been trained on the use of the respirator.) This training includes the following elements:

- Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
- The limitations and capabilities of each respirator used;
- How to use the respirator effectively in emergency situations, including situations where the respirator malfunctions;
- How to inspect, don and remove, use, and check the seals and filters of the respirator;
- The procedures for maintenance and storage of the respirator;
- Recognition of medical signs and symptoms that may limit or prevent the effective use of respirators;
- The general requirements of SBAR's respiratory program and the OSHA, Cal/OSHA, etc. standard(s).

This training is documented using an *Employee Annual Respirator Fit-Test and Training Record (Form CP-00-7000-04-D)* (or equivalent).

Supplemental training is provided, as necessary, based on the following factors:

- Changes in the workplace or a new type of respirator;
- Demonstrated inadequacies in an employee's knowledge or use of the respirator; or
- Any other situation in which retraining appears necessary to ensure safe respirator use.

5.5 Cleaning, Storage, Inspection and Maintenance of Respirators

5.5.1 Routine-Use Respirators (individually assigned respirators)

SBAR provides supplies and parts necessary to assure proper sanitation and maintenance of any respirator assigned to an individual employee. Employees keep their respirators clean and disinfected at all times. The respirator wearer inspects the respirator before each use and during cleaning for proper functioning of all parts and components.

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5.5.2 Non-Routine Use Respirator (emergency and non-individually assigned respirators)

SBAR provides each respirator user with a respirator that is clean, sanitary, and in good working order. SCBA Respirators are cleaned and disinfected before being worn by different individuals. APR Respirators shall be assigned to an individual for their use only and shall not worn by another individual for sanitary and fit test purposes. Respirators maintained for emergency use are cleaned and disinfected after each use Further, respirators used in fit testing and training are cleaned and disinfected after each use.

5.5.3 Storage of Routine-Use Respirators

All respirators are stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve.

5.5.4 Storage of Emergency Respirators

Emergency respirators are:

- Kept accessible to the work area;
- Stored in compartments or in covers that are clearly marked as containing emergency respirators;
- Stored in accordance with any applicable manufacturer instructions;
- All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer's recommendations, and shall be checked for proper function before and after each use;
- Emergency escape-only respirators shall be inspected before being carried into the workplace for use; and
- Inspections are documented by a tag or a written/electronic inspection record.

5.5.5 Inspection and Maintenance of Self-Contained Breathing Apparatus (SCBA)

SCBA devices (emergency and non-emergency) are inspected monthly. Breathing Air cylinders are maintained in a fully charged state and are recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. Further, SBAR ensures that the regulator and warning devices function properly.

5.5.6 APR devices are inspected IAW manufactures recommendations. Respirator masks are inspected for damage, proper operation of head harness, missing parts, discoloration of parts and

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proper fit. Filters are used and replaced IAW a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. SBAR/SBAR contractors describe in the respirator program the information and data relied upon and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

5.6 Air Quality for Self-Contained and Air Line Devices

5.6.1 Compressed Breathing Air/Oxygen Cylinders

- Compressed and liquid oxygen (if used) must meet the United State Pharmacopoeia requirements for medical or breathing oxygen.
- Compressed breathing air meets or exceeds the requirements for Grade D breathing air described in the ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, including: oxygen content (v/v) of 19.5-23.5%; hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less; carbon monoxide (CO) content of 10 ppm or less; carbon dioxide content of 1,000 ppm or less; and lack of noticeable odor.
- Compressed oxygen is *not* used in atmosphere-supply respirators that have previously been used for compressed breathing air.
- Oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.
- Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 173 and part 178).
- Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements of Grade D breathing air.
- The moisture content in the cylinder does not exceed a dew point of -50 deg. F (-45.6 deg. C) at a 1 atmosphere pressure.

5.6.2 Compressor Systems

Compressors used to supply breathing air to respirators are constructed and situated so as to:

- Prevent entry of contaminated air into the air-supply systems.
- Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 deg. F (-5.56 deg. C) below the ambient temperature.
- Have suitable in-line air-purifying sorbent beds and filters to further ensure that the quality of breathing air is maintained by following the manufacturer's instructions.
- Have a tag maintained at the compressor that contains the most recent change date and the signature of the person authorized by the company to perform the change.

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- For compressors that are not oil-lubricated, a means to assure that carbon monoxide levels in the breathing air do not exceed 10 ppm.
- For oil-lubricated compressors, a high-temperature or carbon monoxide alarm, or both, is used to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm.
- Breathing air couplings are incompatible with outlets for non-respirable worksite air or other gas systems. No asphyxiating substance shall be introduced into breathing air lines.
- Only breathing gas containers marked in accordance with the NIOSH respirator certification standard [42 CFR §84] are used.

5.7 Voluntary Respirator Use

Employees who use filtering masks in situations that do not otherwise require the use of a respirator are not covered by this program. Addtionally, employees who use tight-fitting respirators when respirators are not otherwise required are subject *only* to the following provisions of this program:

- Medical evaluation
- Cleaning and sanitation.

Sufficient training will be provided to assure understanding of these requirements.

5.8 Periodic Program Evaluation

At least every six months, the EH&SS (or equivalent) conducts an evaluation of the respirator program. The evaluation consists of:

- A review of the written respiratory protection program (i.e., this WI) to assure that it is up-to-date, effective and is being properly implemented;
- Observation to ensure that employees are using the respirators properly;
- Consultation with an employee representative to assess the employees' views on program effectiveness and to identify any problems;
- Checking respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
- Checking appropriate respirator selection for the hazards to which employees are exposed;
- Requiring proper respirator use under the workplace conditions the employee encounters; and
- Proper respirator maintenance.

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Any problems that are identified during this assessment are promptly corrected and if appropriate, a Process Action Report is initiated. Further, these evaluations are recorded on the Periodic *Respirator Program Evaluation Form (Form CP-00-7000-04-E).*

5.9 Recordkeeping

Records are maintained for at least three years thereafter, of compliance with the elements of the standard including medical evaluations, fit testing, training, periodic evaluation of the respirator program and the program itself.

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PREPARATION, REVIEW, AND APPROVAL OFFICIALS

Prepared By:

R. W. Stone
MCA Quality Manager

Reviewed By:

Mark Stortecky
LOSC Environmental Health and Safety Specialist

Reviewed By:

M. T. Schmoll
Director Corporate Programs

Approved By:

Grace Vaswani
President/CEO

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