OVERVIEW OF GERSON RESPIRATORS

GERSON®

Value, Quality & Performance

Respirator Training

Purpose of Gerson's Respirator Training

To provide the necessary information needed for an individual to become competent to perform respirator fit testing and to provide an overview of the OSHA requirements for a respiratory protection program.

This Presentation provides the following information:

1. An Overview of Gerson Respirators,
2. A Knowledge of the Major Aspects of the OSHA Respiratory Protection Standard,
3. An Understanding of Respirator Fit Testing,
4. Respiratory Protection Resources.

This presentation should be used in conjunction with:

- Gerson's Qualitative Respirator Fit Testing Protocol Presentation,
- Gerson's tutorial video "Gerson Respirator Fit Testing Training".

What Is A Respirators?

A respirator is a device designed to protect the wearer from inhaling harmful airborne dusts, fumes, mists, vapors, or gases.

A respirator must be NIOSH approved.

A respirator must be selected, worn and maintained in accordance with the OSHA *Respiratory Protection Standard, 29 CFR 1910.134 found on the OSHA website at:*

https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=12716

There Are 2 Types Of Respirators

1. **Air Purifying Respirators:** A respirator that removes harmful airborne contaminants from the worker's breathing zone by either a filter or chemical cartridge.

2. **Atmosphere Supplying Respirators:** Provides clean breathing air that is independent of the worker's breathing zone.

1. Air Purifying Respirators

Gerson is a leading manufacturer of air purifying respirators.

Gerson's respirator products include:

Filtering facepiece
N95 to P100

Half Face with a full range of
Filters and Cartridges

Full Face with a full range of
Filters and Cartridges

2. Atmosphere Supplying Resp.

Provides clean breathing air that is independent of the worker's breathing zone.

Supplied Air Respirator

Self Contained Breathing Apparatus

Respirators vs. Surgical Masks

Respirator

≠

Surgical Mask

Resource:
OSHA Training Video "The Difference Between Respirators and Surgical Masks" (5 mins. in duration)
http://www.osha.gov/SLTC/respiratoryprotection/training_videos.html

Note: *Video is in both English and Spanish.*

Respirators vs. Surgical Masks

Particulate Respirators

- NIOSH Approved fit tested with 0.3µm test particle, either solid or oil particles
- Tight Fitting
- Can be Fit Tested
- Protects Against Small Airborne Infectious Aerosols
- Comply with OSHA to Protect Employees
- Some Gerson respirators are FDA cleared for use as a surgical mask

Surgical Masks

- FDA Cleared fit tested with 3.0µm bacteria test particle
- Loose Fitting
- Cannot be Fit Tested
- Barrier For Splashes of Large Droplets of Body Fluids
- Protect Patients
- Can't Be Relied on to Protect Workers Against Airborne Infectious Aerosols

Medical N95 Respirator & Surgical Mask

Gerson offers a Medical N95 Respirator that is both:

- NIOSH Approved N95 Respirator

AND

- FDA Cleared as a Surgical Mask

2735 N95 Healthcare
Particulate Respirator & Surgical Mask

Specialty Particulate Respirators

Gerson offers specialty N95 and R95 respirators that not only provide protection against harmful dusts, fumes and mists; but also provides relief from *nuisance* levels* of organic vapors and acid gases.

1735 N95 Respirator w/OV-AG Nuisance Relief (Made in USA)

1745 N95 Respirator w/OV-AG Nuisance Relief (Made in USA)

1845 R95 Respirator w/OV-AG Nuisance Relief (Made in USA)

WARNING: *Not NIOSH approved for ozone protection, organic vapors or acid gases. "Nuisance Level" refers to concentrations not exceeding the OSHA PEL or applicable government standards for exposure limits, whichever is lower. Do not use in or around sandblasting. This product does not supply oxygen.*

OSHA RESPIRATORY PROTECTION STANDARD

History of OSHA Standard

- 1971 – Original standard adopted, mostly based on ANSI's **Practices for Respiratory Protection** Z88.2-1969.
- 1998 – "New Standard" adopted after 16 years of going through rule making process.

(1982 Advanced Notice of Proposed Rule Making)

When is a Respirator Required by OSHA?

A respirator is required under 2 circumstances:

- When there are hazardous levels of air contaminants present – above the OSHA Permissible Exposure Limit (PEL) or other Occupational Exposure Limit (TLV).
- When required by Company policy.

When a respirator is required, a complete respiratory protection program must be implemented in order to comply with OSHA.

Voluntary Use of Respirators

(1910.134(c)(2)

- An employer may provide respirators at employee's request or permit employees to use their own respirators, if the employer determines that such use in itself will not create a hazard.
- If voluntary use is permissible, employer must provide employee with the information contained in Appendix D of the Respirator Standard.

After the above 2 requirements are met, the OSHA Respirator Standard has different requirements for the voluntary use of elastomeric facepiece respirators and filtering facepiece respirators.

Voluntary Use of Respirators

(1910.134(c)(2) - Continued

- **Elastomeric Facepiece Respirators**

  The Employer must establish and implement those elements of a written program necessary to ensure that employee is medically able to use the respirator and that it is cleaned, stored and maintained so it does not present a Health hazard to the user.

- **Filtering Facepiece Respirators**

  Employers are not required to include in a written program employees whose only use of respirators involves the voluntary use of filtering facepiece respirators. Therefore, for filtering facepiece respirators, an employer is only required to determine if the use of the respirator creates a hazard and provide Appendix D of Respiratory Protection Standard.

Appendix D of the Respirator Standard

Appendix D to Sec. 1910.134 (Mandatory)

Information for Employees Using Respirators When Not Required Under the Standard

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

[63 FR 1152, Jan. 8, 1998; 63 FR 20098, April 23, 1998]

Voluntary Use of Respirators
(1910.134(c)(2)

Resource:

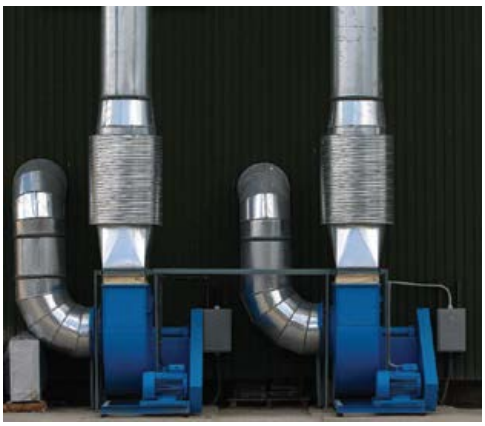
OSHA Training Video "Voluntary Use of Respirators"
(5 minutes in duration)

http://www.osha.gov/SLTC/respiratoryprotection/training_videos.html

Note: *Video is in both English and Spanish*

Does OSHA consider respirators a primary means of controlling hazardous exposures?

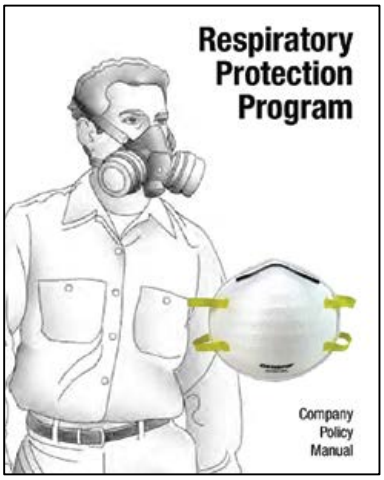
- No, OSHA considers Engineering or Administrative controls (Ex: exhaust ventilation, elimination, substitution) as the primary means of reducing hazardous exposures.
- Respirators must be used when effective Engineering or Administrative controls are not feasible or while they are being implemented.



Respiratory Protection Program

In order to comply with the OSHA *Respiratory Protection Standard* the program must be:

- Overseen by a trained Program Administrator,
- Implemented at no cost to the employees,
- Site specific,
- Written and updated as needed.



OSHA Respiratory Protection Standard

A Written Respiratory Protection Program Includes

- **Worksite specific procedures for:**
  - Respirator Selection
  - Medical Evaluations
  - Use of Respirators
  - Maintenance and Care of Respirators
  - Air quality
  - Fit Testing and Training
  - Program Evaluations
  - Recordkeeping

Resource:

https://www.osha.gov/Publications/3384small-entity-for-respiratory-protection-standard-rev.pdf

Respirator Selection Considerations

Hazard evaluation

- Dust, fume, mist, gas or vapor
- Airborne concentration vs. PEL or TLV
- Immediately Dangerous to Life and Health (IDLH) Atmosphere

Workplace and user factors

- Heat, other PPE

NIOSH approved respirators types:

- Particulates: Dust, Fume, Mist – grinding dust, welding fume, metal plating mist
- Gas or Vapor: organic vapor, acid gases (HCL, HS), formaldehyde, etc.

Assigned protection factors - APF

NIOSH Classifications

- N95 - Filters at least 95% of airborne particles. Not resistant to oil.
- Surgical N95 - A NIOSH-approved N95 respirator that has also been cleared by the Food and Drug Administration (FDA) as a surgical mask.
- N99 - Filters at least 99% of airborne particles. Not resistant to oil.
- N100 - Filters at least 99.97% of airborne particles. Not resistant to oil.
- R95 - Filters at least 95% of airborne particles. Somewhat resistant to oil.
- P95 - Filters at least 95% of airborne particles. Strongly resistant to oil.
- P99 - Filters at least 99% of airborne particles. Strongly resistant to oil.
- P100 - Filters at least 99.97% of airborne particles. Strongly resistant to oil.

Assigned Protection Factors

After passing Qualitative Fit Testing (QLFT), Gerson Air Purifying Respirators have the following Assigned Protection Factors (APF):

Filtering Facepiece and Half Face Respirators

An APF of 10 based on either QLFT or QNFT

Full Face Respirators

An APF of 10 based on QLFT
An APF of 50 based on QNFT

Note: QNFT refers to Quantitative Fit Testing.

Respirator Selection Considerations

Filters - Filter selection

- Oil versus non-oil atmosphere.
- R or P grade filter for oil and N grade filter for non-oil.
- Filter efficiency – 95%, 99%, 100%.

Gerson has a full line of filters from N95 to P100.

Chemical Cartridge - ESLI or change schedule

- A Small Number of Respirators Have End of Service Life Indictors (ESLI).
- Change Schedule – before air contaminant breakthrough, most often used and based on objective data.

Gerson has a full line of chemical cartridges: organic vapor, acid gases, formaldehyde, ammonia/methylamine and multigas.

Respirator Selection Considerations

May be defined by a substance-specific standard or guideline

- Asbestos, Lead, Formaldehyde, etc.,
- CDC Recommendations – Infectious Diseases,
- Refer to NIOSH Pocket Guide To Chemicals.
  http://www.cdc.gov/niosh/npg/npgsyn-a.html

Requirements for IDLH and Non-IDLH atmospheres

- IDLH – SCBA, Combo SAR/SCBA
- Non-IDLH – Air Purifying Respirators or Supplied Air Respirators

Employer must provide a sufficient number of respirator models and sizes to fit employees

- Fit testing

Respirator Selection Considerations

Resources

Respirator selection:

OSHA Advisor Genius for Respirator Selection
https://www.osha.gov/SLTC/etools/respiratory/respirator_selection_advisorgenius.html

Chemical Cartridge Change schedule:

Software

- NIOSH MultiVapor™ Version 2.2.3 Application
- Valid Through December 31, 2015

http://www.cdc.gov/niosh/npptl/multivapor/multivapor.html

OR

Math Models and Rule of Thumb
https://www.osha.gov/SLTC/etools/respiratory/change_schedule.html

NIOSH Pocket Guide To Chemicals:
http://www.cdc.gov/niosh/npg/npgsyn-a.html

Medical Evaluation Provisions

OSHA Respiratory Protection Standard

1910.134(e)

American National Standard for Respiratory Protection Respirator Use Physical Qualifications for Personnel

Z88.6 - 2006

Medical Evaluation Provisions

Perspective:

We are concerned not with what the respirator is doing for us. Rather we are concerned with what the respirator may be doing to us.

Therefore, medical evaluation of an individual for respirator use is essential.

Confidential online medical evaluation resource available – contact Gerson.

Medical Evaluation Provisions

What a respirator does to the wearer may include the following:

- Increased fatigue due to increased weight being carried,
- Increased breathing resistance,
- Higher breathing rate,
- Potential claustrophobia,
- Change in habits,
- Other.

Medical Evaluation Provisions

- Employer must provide a medical evaluation to determine employee's ability to use a respirator, before fit testing and use.

- Employer must identify a Physician or Other Licensed Health Care Professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medi obtains the same information.

Resource:
https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9783

Medical Evaluation Provisions

Physician or Other Licensed Health Care Professional (PLHCP)

An individual whose legally permitted scope of practice
(i.e., license, registration, or certification) allows him/her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e), *Medical evaluation*.

Medical Evaluation Provisions

Additional Medical Evaluations

- **Annual review of medical status for respirator usage is not required.**
- **Employer must provide additional medical evaluations if:**
  - Employee reports medical signs or symptoms related to the ability to use a respirator.
  - PLHCP, supervisor, or program administrator informs the employer that an employee needs to be reevaluated.
  - Information from the respirator program, including observations made during fit testing and program evaluation, indicates a need.
  - Change occurs in workplace conditions that may substantially increase the physiological burden on an employee.

Medical Evaluation Provisions

OSHA does not require a specific frequency for addition medical evaluations. There are organizations that provide guidelines, such as: *American National Standard for Respiratory Protection - Respirator Use Physical Qualifications for Personnel, Z88.6 - 2006.*

Recommended Frequency of Medical Evaluations

- Initially
- A medical questionnaire can be given annually prior to fit testing or

Be age specific:

Every 5 years up to 35
Every 2 years up to 45
Annually after 45

- Annually for all SCBA users
- Stress test for SCBA users

The entire Z88.6-2006 Standard is available at: http://www.ansi.org/

Resource: https://www.osha.gov/video/respiratory_protection/medevaluations.html

OSHA Respiratory Protection Standard

Use of Respirators

Requires procedures for:

- Face seal protection (beards, eye glasses, etc.).
- User seal checks – negative or positive.
- Continuing respirator effectiveness – maintenance.
- IDLH situations and firefighting:
  - IDLH - Standby Person, communication, rescue
  - Firefighting – 2 in and 2 out rule, rescue

Maintenance and Care

- Cleaning
- Inspection
- Repair
- Storage

- **Employer must provide each user with a respirator that is clean, sanitary and in good working order.**

- **Respirators must be cleaned and disinfected at the following intervals:**
  - as often as necessary when issued for exclusive use.
  - before being worn by different individuals when issued to more than one employee.
  - after each use for emergency respirators and those used in fit testing and training.

Always follow Gerson's Respirator cleaning and maintenance instructions provided with each facepiece.

Breathing Air Quality

Specifications for Supplied Air Respirators & SCBA

- **Air Quality**
  - Grade "D" air – O2, CO, CO2
- **Containers**
  - Hydrostatic testing of SCBA cylinders
- **Air Systems**
  - Suitable sorbent beds

Program Evaluation

Periodic evaluation of:

- Program
- Procedures
- Effectiveness

Consultation with employees

Recordkeeping

- Records of medical evaluations must be retained and made available per 29 CFR 1910.1020.
- A record of fit tests must be established and retained until the next fit test is administered – 1 year.
- A written copy of the current program must be retained.
- Written materials required to be retained must be made available upon request to affected employees and OSHA.

RESPIRATOR FIT TESTING

Fit Testing Definition

The use of a challenge agent to evaluate the face to respirator facepiece seal on an individual.

Reasons for Fit Testing

- Select brand, model, and size for each user.
- Comfort.
- Compatibility with other protective equipment, e.g., safety glasses.
- OSHA requirement - 1910.134(f)(1) - (8) and Appendix A.

Respirator Fit Testing

Fit Testing is required for all Gerson tight fitting respirators.

Fit Testing Protocols

There are 2 types of fit testing:

1. **Qualitative Fit Testing (QLFT)**
   Pass or Fail
   (Saccharin, Bitrex, Banana Oil or Irritant Smoke)

2. **Quantitative Fit Testing (QNFT)**
   Minimum Fit Factor (100, 500)
   (Aerosols, Ambient Air, Negative Pressure)

Respirator Fit Testing

1. Qualitative Fit Testing (QLFT)

Pass or Fail (Saccharin or Bitrex)

Gerson's QLFT Kit include:

- Saccharin or Bitrex sensitivity solution
- Saccharin or Bitrex Fit Test Solution
- 2 Nebulizers with inserts
- Fit Test Hood
- Instructional DVD

Respirator Fit Testing

Gerson Qualitative Fit Test Kits and Supplies
(Saccharin and Bitrex)

DESCRIPTION	QTY	PART #
Qualitative Saccharin Fit Test Kit* (Sweet) with Test Hood, 2 Nebulizers with inserts, Sensitivity Solution and Instructional DVD.	1	065000
Saccharin Sensitivity Solution (60ml Bottle)	6	065100
Saccharin Fit Test Solution (60ml Bottle)	6	065200
Qualitative Bitrex™ Fit Test Kit* (Bitter) with Test Hood, 2 Nebulizers with inserts, Sensitivity Solution and Instructional DVD.	1	066000
Bitrex™ Sensitivity Solution (60ml Bottle)	6	066100
Bitrex™ Fit Test Solution (60ml Bottle)	6	066200
Nebulizers (no label)	3	065300
Test Hoods	10	065400-10

Respirator Fit Testing

2. Quantitative Fit Testing (QNFT)

The two most common QNFT protocols performed today are either Ambient Air or Controlled Negative Pressure.

Probed respirators with QNFT adaptors are available for all Gerson respirators.

A minimum Fit Factor of 100 is required for all half face respirators

A Minimum Fit Factor of 500 is required for all full face respirators

Fit Testing Frequency

Employees using any Gerson tight-fitting facepiece respirator must pass either a qualitative fit test (QLFT) or quantitative fit test (QNFT):

- Prior to initial use.
- Whenever a different respirator facepiece (size, style, model or make) is used.
- Whenever the employee reports, or the employer or PLHCP makes visual observations of, changes in the employee's physical condition (e.g., facial scarring, dental changes, cosmetic surgery, or obvious change in body weight) that could affect respirator fit.
- At least annually thereafter.

Comparison of QLFT and QNFT

- OSHA accepts either fit testing methods.
- QLFT – inexpensive, easy, subjective, pass/fail.
- QNFT – more expensive, objective, numerical fit factor, requires training in use of specific testing equipment.
- When both QLFT or QNFT fit testing are passed, an Assigned Protection Factor (APF) can be applied to the respirator type for that user.

Assigned Protection Factors

Gerson Air Purifying Respirators have the following Assigned Protection Factors (APF):

Filtering Facepiece and Half Face Respirators

An APF of 10 based on either QLFT or QNFT

Full Face Respirators

An APF of 10 based on QLFT
An APF of 50 based on QNFT

Fit Testing and Facial Hair

- Beards and other facial hair may interfere with the face to face piece seal of the respirator.
- Jeopardizes the health of respirator wearer.
- Fit testing shall not be performed if facial hair interferes with respirator seal.

Training and Information

- OSHA 1910-134(c)(3) requires that *"The employer shall designate a program administrator who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness."*.
- Employees who are required to use respirators must be trained such that they can demonstrate knowledge of at least:
  - why the respirator is necessary and how improper fit, use, or maintenance can compromise its protective effect,
  - limitations and capabilities of the respirator,
  - effective use in emergency situations,
  - how to inspect, put on and remove, use and check the seals,
  - maintenance and storage,
  - recognition of medical signs and symptoms that may limit or prevent effective use,
  - general requirements of this standard.

Training and Information (cont'd)

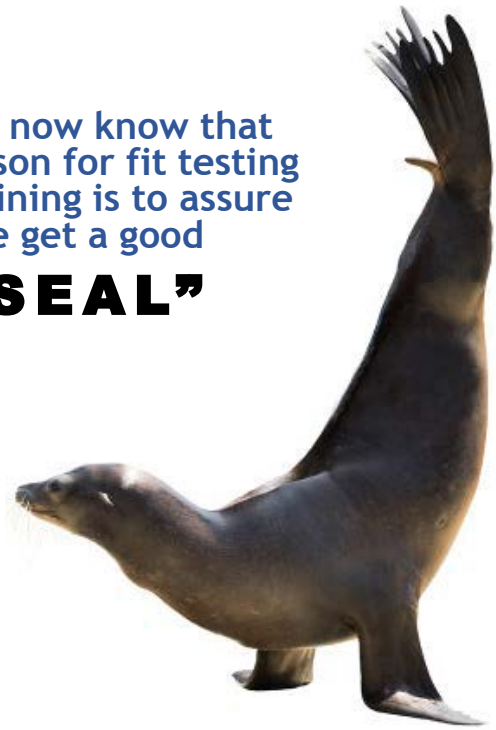
- Training must be provided prior to use, unless acceptable training has been provided by another employer within the past 12 months.
- Retraining is required at least annually, and when:
  - changes in the workplace or type of respirator render previous training obsolete.
  - there are inadequacies in the employee's knowledge or use.
  - any other situation arises in which retraining appears necessary.

Note: *Annual training is not required for employees wearing respirators on a voluntary basis. The basic advisory information in Appendix D of the Respiratory Protection Standard must be initially provided.*

Respirator Fit Testing

We all now know that the reason for fit testing and training is to assure we get a good

"SEAL"



Respirator Protection

Resources

OSHA:

- Videos
  https://www.osha.gov/SLTC/respiratoryprotection/training_videos.html#video
- Respiratory Protection Frequently Asked Questions
  https://www.osha.gov/dte/library/respirators/faq.html
- Hospital Respiratory Protection Toolkit
  https://www.osha.gov/Publications/OSHA3767.pdf

NIOSH:

- Respirator Resources
  http://www.cdc.gov/niosh/topics/respirators/
- Implementing Hospital Respiratory Protection Programs: Strategies from the Field
  http://www.jointcommission.org/topics/monographs_and_white_papers.aspx

Other:

- Respiratory Protection Education AAOHN Education & Resources Webkit Free Online Learning - http://aaohnacademy.org/rpp/rpp-program.php

Over 60 Years Of Value, Quality & Performance

For more than 60 years, the Louis M. Gerson Company has manufactured innovative products used all over the world. Continually developing new technologies to stay on the cutting edge of progressive product development and innovation, Gerson is committed to providing Value, Quality & Performance to our customers.

To assure the highest quality and purity of products as well as user value, all manufacturing in our U.S. facility is automated, utilizing proprietary equipment of our own design and manufacture. Gerson is a prime manufacturer of its principle products, assuring that each product is produced to our unique and exacting specifications. To remain globally competitive, we also utilize overseas assembly operations, again, using Gerson-owned and designed equipment.

Whatever Gerson products you select, you can be assured that it has been engineered and manufactured to provide top Quality, Value and Performance.

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