Respiratory Protection Newsletter - February 2024

Featured Courses:

Respirator Overview & Fit Testing Workshop:	April 16-18, 2024
Respirator Selection & Change Out Schedules:	May 14-15, 2024
Fit Testing Refresher & Advanced Topics:	May 16, 2024

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Differences in Filtering Facepiece Standards - CSA versus NIOSH

During a recent trip to Florida I had the opportunity to read an excellent article by **Simon Smith**, Ph.D., from the November 2023 issue of "*The Synergist*", a publication of the American Industrial Hygiene Association (AIHA). The title of the article was: **Meeting an Urgent Need - A New Respirator Performance Standard**. This article by Dr. Smith summarized the October 2021 Canadian Standards Association (CSA) guideline titled: Performance of Filtering Respirators, designated as CSA Z94.4.1:21. This standard was developed to address some of the shortcomings of filtering facepiece respirators and medical masks identified during SARS–1 and COVID-19. My March 2022 *Respiratory Protection Newsletter* briefly highlighted some of the most significant features of the CSA Standard, but after reading Dr. Smith's article, I could have done more.

The current NIOSH requirements for respirator filters and filtering facepiece respirators (FFRs) are in the U.S. Code of Federal Regulations - 42 CFR 84, which became effective in 1995. It was this change that led to the designation of N, R, & P filters with filtration efficiencies labeled as 95, 99, or 100. This led to the birth of the now well-known N95 FFR. For better or worse, during the last two (2) decades, few changes have been made to 42 CFR 84, relevant to FFRs. With the release of CSA Z94.4.1:21, Canada now has it's own accreditation program for filtering respirators, which go beyond NIOSH requirements.

I can't replicate the comprehensive summary provided by Dr. Smith, but I can highlight some features of interest to my readers. Let's begin with:

Respirator Fit

To meet CSA requirements, filtering facepiece respirators must undergo and pass quantitative fit testing to a representative panel off human subjects.

The test procedure is similar ASTM F3407-20, commonly referred to Respirator Fit Capability testing. The representative panel of human subjects consists of people having a variety of different face lengths and widths. This type of testing doesn't replace fit testing for the individual wearer. Rather, it's a standardized test procedure designed to help identify if a given make and model respirator has the potential to fit a population of respirator wearers. Currently, NIOSH does **not** include a standardized quantitative test procedure to weed out respirators with poor fitting characteristics. This is why so many NIOSH-approved® N95 FFRs can't pass a properly administered fit test on individual workers. During the height of COVID-19, the U.S. Centers for Disease Control (CDC) published documents stating that N95 FFRs "are designed to fit". This statement is false or at best, misleading. As a result, millions of N95 FFRs were issued to healthcare workers with poor fitting characteristics. Combine this with the following:

1) Fit testing is frequently administered incorrectly, especially in health care, and
2) OSHA rarely enforces proper administration of fit testing.

The end result is issuing a respirator that doesn't provide the expected level of protection in the workplace.

Fluid & Flammability Resistance

When fluid resistance is needed in the U.S., NIOSH and the Food & Drug Administration (FDA) have an agreement for respirators used in healthcare. These respirators are commonly known as surgical respirators. Fluid resistance testing is different than filtration efficiency testing. In health care settings, it's possible to puncture a blood vessel during certain procedures. The resulting spray of blood could hit a facepiece worn by a healthcare worker and subsequently move through the facepiece and become visible on the inside. Contaminating the inside of a face covering with blood is obviously a concern. ASTM has a test procedure (F1862) to evaluate visual penetration of synthetic blood through medical masks and an additional guideline (F2100) with criteria (Levels 1 - 3), based in part on the velocity of the spray use for the test. The CSA Standard simplifies recognition of CA-N type filtering facepieces that meet fluid protection level 3, with the addition of the letter "F" as a suffix, which represents fluid & flammability protection. For example, CA-N95F, CA-N99F, or CA-N100F (refer to marking explanation below).

Breathability

The Canadian class of CA-N95 and CA-N95F respirators shall include an additional marking to identify how easy it is to breathe through the filter media. For this test, the resistance to airflow at 85 L/min will be evaluated and subsequently classified into three (3) levels. If the maximum inspiratory and expiratory pressure is less than 100 Pascals (abbreviated as Pa, a metric unit), the suffix "-100Pa" is added. If the maximum inspiratory and expiratory pressure is less than 175 Pascals, the suffix "-175Pa" is added. Lastly, if the maximum inspiratory pressure is less than 343 Pascals and maximum expiratory pressure is less than 245 Pascals, the suffix "-343Pa" is added. The latter values are equivalent to the NIOSH values. An advantage of the CSA scheme is that users will be able to readily compare breathability, since lower resistance values (Pa) indicate easier breathing.

Marking Examples

Here's some examples:

CA-N95-100Pa	N-type filter, tested with NaCl (non-oil), with a minimum filter efficiency of 95%, having the lowest (easiest) breathing resistance. Fluid/flammability was either not tested or failed.
CA-N95F-100Pa	N-type filter, tested with NaCl (non-oil), with a minimum filter efficiency of 95%, meeting fluid/flammability criteria and having the lowest (easiest) breathing resistance.
CA-P100	P-type filter, tested with an oil, with a minimum filter efficiency of 99.97%.

Comment: R & P-type filters don't undergo fluid/flammability testing and are not categorized by breathability, but must have a maximum inspiratory pressure less than 343 Pascals and a maximum expiratory pressure less than 245 Pascals.

Other differences include a quantitative assessment for strength of facepiece straps, designation of filter shelf life, reference to ISO standards for bio-compatibility, and other requirements.

For additional information, I highly recommend Dr. Smith's November 2023 "*Synergist*" article. Unfortunately, the article is copyright protected as a publication of the American Industrial Hygiene Association (AIHA), but you may have some luck if you send an email to: synergist@aiha.org

To purchase CSA Z94.4.1:21; Performance of Filtering Respirators or to view it for free (Canadian users only): Click Here

Wildfire Smoke Rules Respirator Requirements

Effective January 15, 2024 the Washington State Dept of Labor & Industries enacted new wildfire smoke rules that include guidelines for use of respiratory protection. Here's a brief overview from a respiratory protection viewpoint, but if you need to implement the rule, you should obtain a copy of the rule using the URL provided below.

In brief, employers will be required to protect the health of outdoor workers based upon the level of smoke in the air. Levels can be measured in two ways:

1) As $PM_{2.5}$ which measures extremely small particles measured in micrograms per cubic meter (µg/m3) and is commonly called fine particulate matter.

2) Using an Air Quality Index (AQI) called NowCast AQI PM2.5. This is an index produced by the EPA to communicate general air quality based on $PM_{2.5}$.

For example, here are the AQI levels that trigger various levels of respiratory protection fo covered employers:

69-100	Consider providing voluntary use respirators
101-300	Make N95 respirators available for voluntary use.
301-499	Directly distribute N95 respirators to employees for voluntary use.
500-beyond the AQI:	Implement a complete required use respiratory protection program, including fit-testing, medical evaluations, requiring employees to be clean-shaven, and requiring the use of particulate respirators.
Beyond the AQI:	Require respirators with an assigned protection factor (APF) of 25 or more.

With this requirement now in place, you can expect other state and perhaps federal agencies to develop similar policies.

To access the Washington State Dept of Labor & Industries website that summarizes this rule Click Here
To read the legal document use the following URL: https://lni.wa.gov/rulemaking-activity/AO20-29/2029Adoption.pdf

Or, Click Here

Mail from Readers:

Hello: In response to the request for stories of improper fit testing, I submit this story:
I attended Dr. Mckay's 2 + 1 day fit testing class in 1998, so I was aware of proper fit testing procedures. I had a qualitative fit test at the University of **Redacted** Occupational Health Dept. I was in awe of the entire U of **X** situation. Of course, the fit test was a pass because the fit tester did not follow the NIOSH steps. I believe she said she didn't normally conduct fit testing but was sometimes required to.

- She didn't teach or double check my ability to don and perform a user seal check.
- She directed me to complete only 3 fit test exercises (normal breathing, turning head up and down then side to side) and they weren't 1 minute each.
- She sprayed the fit testing solution, but not in the proper way to maintain an particle aerosolization count to challenge the seal.

I was in such shock, I couldn't say anything. I was also thinking of the health care workers across this massive facility, caring for the most unusual patient population without real protection. University hospitals have patients that no one else can figure out. They could have anything going on with them. It was horrifying that this was the fit testing process for new hires.

Submitted by D.A.T, email dated 3/31/23

Note: Mail from Readers may have misspellings, duplicate words and/or grammar corrected. Changes made for this newsletter are done without changing context. Portions not relevant to the topic are usually removed. Names and/or identifiers are removed.

Wanted: Photos & Videos of Improper Fit Testing
To my readers, please continue sending photos, videos and testimonials of improperly conducted fit testing. If you worked for an employer that conducted fit testing improperly, share your story. If your employer knowingly had the fit test operator administer the test incorrectly, share this too. I promise to keep your name and employer name confidential. If you have a good story, photo or video, send it to Roy@DrMcKay.com

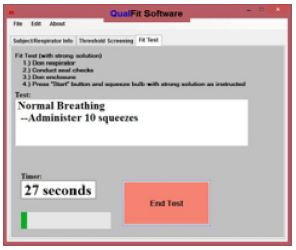
Getting Rid of Suction Cups
Previous newsletters announced the coming release of **Fit Test Tubing Holders™** for use with ambient aerosol quantitative fit testing methods (i.e., TSI PortaCount® & AccuFIT 9000®). Tubing holders make the process of fit testing faster and more reliable. More importantly, they help eliminate passing of poorly fitting respirators. Unfortunately, I've had to temporarily suspend public release of this product to figure out a cost-effective way to produce these in volume, pack, and ship. Consequently, if you're tired of suction cups falling off during the middle of fit testing or getting unreliable results, you'll need to wait a little longer. I'll consider making these available to researchers, who want confidence they're getting a reliable in-facepiece sample.

Fit Testing Refresher & Advanced Topics
This 1-day course is specifically designed for the person who has been conducting fit testing, but needs a better understanding as to why poorly fitting respirators pass can pass a fit test and why good fitting respirators fail. This class provides an opportunity to discuss advanced topics not covered during a typical 2-day fit testing workshop due to time limitations. This course is also valuable for respirator program administrators who need a better understanding of fit testing procedures and assurance that their fit testing program is being run properly. **This program identifies tricks and omissions some fit test operators' use to allow poorly fitting respirators to pass fit testing (QLFT & QNFT).**
May 16, 2024

QualFit® Software©

An easier, more accurate, and defendable way to administer respirator fit tests using sweet or bitter fit test methods.

QualFit® software© automates and records qualitative respirator fit testing using Saccharin and/or Bitrex aerosol solutions. The software prompts the operator to deliver the aerosol solution with the correct number of squeezes for each exercise, at the proper time, and in the proper order. This improves fit testing accuracy. The software displays the current exercise in progress, automates the timing sequence and calculates the number of squeezes to be administered, based on threshold screening results. Visual and audible prompts allow the operator to focus their attention on the respirator wearer. The entire procedure becomes less frustrating for the operator and subject being tested. The software tracks each step of the fit testing procedure required in mandatory Appendix A of the OSHA Respirator Standard. **QualFit®** software improves the quality and efficiency of respirator fit testing. An OSHA compliant report can be printed or electronically saved. The employer benefits by knowing the test procedure was properly administered and provides written documentation for compliance with record keeping requirements specified in paragraph "m" of the OSHA standard. The employee benefits by knowing a standardized procedure was followed, rather than what often appears to be a random procedure.

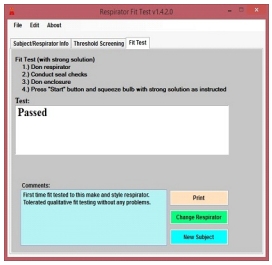


QualFit® - Making Respirator Fit Testing Simple

For Information visit: www.QualFit.net
To place a secure online credit card order visit: https://qualfit-software.square.site/

The name (mark) **QualFit®** is registered with the U.S. Patent & Trademark Office.
QualFit® Software© is registered with the U.S. Copyright Office June 13, 2021.

Final screen indicating test passed and operator comments. Includes option to print now or later, change to a different respirator, or select a new subject.



NIOSH News

Counterfeit P100® Filters

On January 31, 2024, NIOSH sent out a notice regarding counterfeit P100® filters. With respect to this particular announcement it said:

> "NIOSH has identified many filters being sold on well-known online marketplaces claiming to be P100® filters that are not part of a NIOSH Approved® respirator configuration.".

Here's a picture from the NIOSH website, which had the following sentence below the graphic:

> "**Buyer Beware!** NIOSH has identified many filters sold on well-known online marketplaces claiming to be P100® filters that are not part of a NIOSH Approved® respirator configuration.".

The examples shown in the figure below have the same part number as 3M P100 filters and some of the listings from these well known online marketplaces even go so far as to falsely claim that they can be used with 3M 6000 series facepieces.

The NIOSH announcement reminds users that one way to identify counterfeit P100 filters is by missing information. The abbreviated label (i.e., markings) on NIOSH Approved P100 filters must include the following six (6) items:

1) the approval holder's name,
2) product model or trade name,
3) protections/filter series (e.g P100, N95, etc),
4) part number,
5) the mark "**NIOSH**", and
6) lot number (this location can vary and may be on filter, packaging, or user instructions).

I don't understand why counterfeiters don't hire someone to do a better job with labeling requirements. Sometimes they do, but often don't. In my experience, the packaging is often different, with miss-spelling of words, incorrect colors, etc.

Remember, if you use a counterfeit filter with a facepiece that is NIOSH Approved®, this voids the NIOSH approval for the complete assembly. In addition, the level of protection is unknown.
For additional information, visit the NIOSH website for Counterfeit Respirators at
https://www.cdc.gov/niosh/npptl/usernotices/counterfeitResp.html
or, Click Here

Counterfeit Filters

Breath Buddy is NOT a NIOSH approval holder

While we're on the topic of buying online products, be aware that Breath Buddy is **not** a NIOSH approval holder, In this case, NIOSH says:

> "They are falsely indicating product can be used with half and full facepieces made by other NIOSH approval manufacturers. The Breath Buddy Particulate Filter is NOT a component associated with a NIOSH approval. Users cannot use this filter in place of the filter component associated with the NIOSH Approved respiratory protective device. If so, it will void the NIOSH approval.".

A picture of the Breath Buddy particulate filter is shown on the right side of this page.

Breath Buddy package and filters

Manufacturer User Notices:

A&Z Pharmaceutical Rescinds Respirator
NIOSH has honored a request by A & Z Pharmaceutical, Inc. to voluntarily rescind one NIOSH respirator approval issued to A & Z Pharmaceutical, Inc.

As of December 6, 2023, any respirator marked with a NIOSH approval label with approval number **TC-84A-9307** is no longer NIOSH approved. The NIOSH Certified Equipment List no longer includes this approval number.

The full text of NIOSH CA 2024-1072 is at: https://www.cdc.gov/niosh/npptl/resources/pressrel/letters/respprotect/pdfs/CA-2024-1072-P.pdf

Or, Click Here

NIOSH doesn't show a photo of the respirator and it doesn't point out it was an N95 Filtering Facepiece Respirator, but here's what it looks like:

Ocenco: Elevated Carbon Dioxide in EEBD
In a notice posted by Ocenco Incorporated, they became aware that "numerous" M-20.3 Self-Contained Self-Rescuer (SCSR) /Emergency Response Breathing Devices (EEBD) may be producing elevated inspired carbon dioxide and wet bulb temperature levels. The elevated inspired carbon dioxide levels were discovered during NIOSH/NPPTL post-approval testing. According to a January 11, 2024 notice, Ocenco "is currently working to determine what remedial actions are required to address the cause(s) of the failure(s)". Affected part numbers for model M-20.3 are 940300 and 940301.

According to the manufacturer, the elevated carbon dioxide and temperature conditions occur only during very high work activity. Therefore, they are informing users "to moderate the pace of their escape to reduce their carbon dioxide output, lower their inspired gas temperature, and increase the duration of the device". Questions regarding this issue should be directed to Michael Kay (Engineering Manager) at mikekay@ocenco.com

Here's what the M20.3 EEBD looks like.

Ocenco —20.3 EEBD

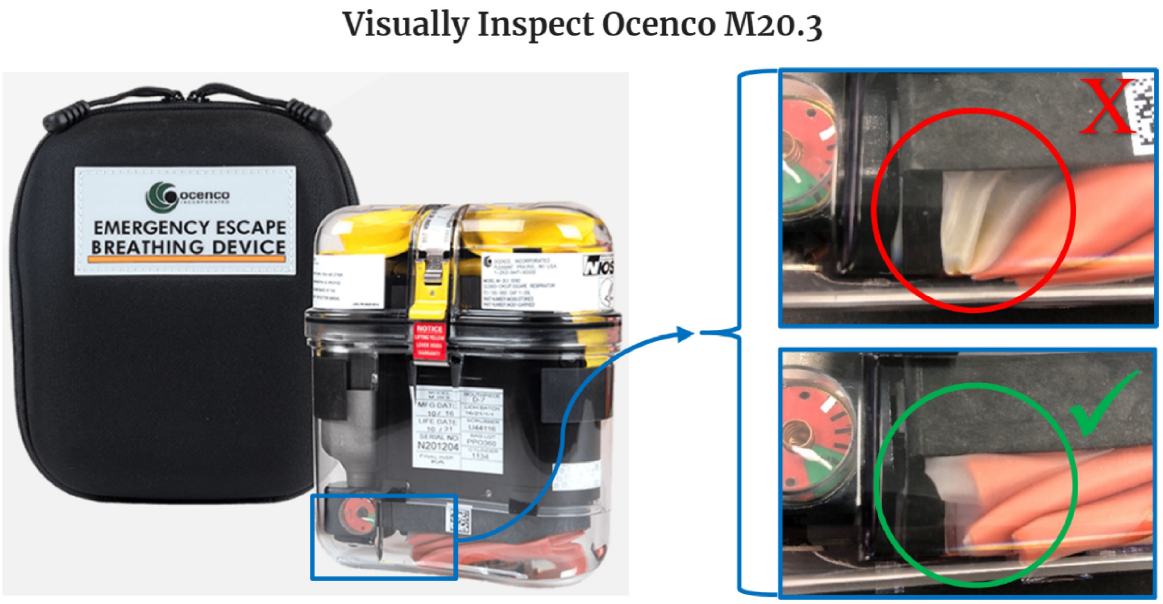
For additional information, go to the NIOSH Respirator User Notices Issued by Manufacturers webpage under the Ocenco Inc. section or just Click Here

To access the NIOSH NPPTL website page with the alphabetical listing of respirator manufacturer notices, Click Here.

Ocenco: Respiratory Irritation from Powder

While reviewing the NIOSH manufacturers User Notices website for the Ocenco —20.3 EEBD regarding elevated carbon dioxide levels in some M-20.3 SCSR/EEBD's (see above), I stumbled upon a December 2023 Safety Alert for this same unit. In this case, during a mandated approval audit, NIOSH evaluated 16 belt-worn M20.3 Ocenco units that had been in service at an active coal mine. Testing revealed that 3 of 16 units (18.8%) contained a white sorbent powder (dust) inside the breathing bag. The safety notice states that users coming into contact with sorbent material may experience respiratory distress and skin irritation. To detect the defect, owners and users should visually inspect M-20.3 by looking through the clear base and checking for the presence of white dust within the clear breathing bag. Units with visible powder/dust inside the breathing bag may not perform for their rated duration and must be removed from service immediately.

Here's what to look for:



No Visible Powder Should be Inside the Breathing Bag

For a PDF version of the Mine Safety & Health Administration (MSHA) Safety Alert, Click Here
Or, go to the NIOSH Respirator User Notices Issued by Manufacturers webpage under the Ocenco Inc. section, and select the December 2023 notice.

> Comment: While reviewing the Mine Safety & Health Administration (MSHA) Safety Alert for the Ocenco —20.3, I noticed no date on the alert.

ISRP International Conference News is on the next page.

ISRP News

ISRP International Conference Sept 22-26, 2024

The European Section of the International Society for Respiratory Protection (ISRP) will hold it's 21st International Conference September 22 - 26, 2024 in Oxford, United Kingdom. The venue will be the historic University city of Oxford, at Pembroke College. I've been to Oxford and can say that it's a wonderful place to visit. This years conference will focus on"Use and Users" of respiratory protective devices.

For those interested in presenting at the conference, submission of abstracts are due by June 30, 2024. Abstracts can be submitted electronically to oxford.technical@isrp.com as an editable Word document and should be no more than 250 words long, excluding the title and the names and affiliations of the authors. For additional instructions go to:
https://www.isrp.com/events/next-international-conference

Registration Info:
Early Bird member fees will be £700 to include all four days of the conference, registration, reception on Sunday, Monday evening event and the Awards dinner on Wednesday. Other fees apply to non-members, late bookers and day delegates.

Lodging:
In addition to a wide variety of local options, rooms have been reserved at Pembroke College, available at:
https://www.isrp.com/events/next-international-conference
The booking code to use is ISRP2024.

For a PDF brochure, Click Here

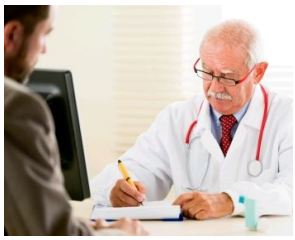
For questions regarding the conference, email:
oxford@isrp.com

Wanted: Fit Test Adapters

Rather than throwing away damaged fit test adapters, consider donating them to our fit testing workshops. We strive to make our fit testing workshops as realistic as possible. Incorporating damaged along with good fit testing adapters can provide a valuable training experience. If you wish to send a damaged fit test adapter or a damaged facepiece with unusual or difficult to find leakage for our respirator inspection workshops, send us an email at info@DrMcKay.com and we'll provide shipping information.

Undamaged fit test adapters are also needed. On average, we lose one (1) fit test adapter every workshop due to wear and tear, poor adapter design, and other causes. If you've switched to another method of fit testing, rather than putting unwanted adapters into a landfill or taking-up space in you cabinet, donate them to our workshop.

Medical Complications from Respirator Use

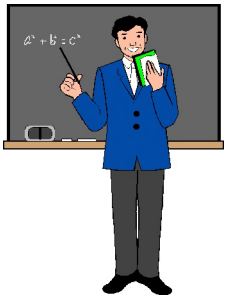


OSHA requires respirator medical clearance for persons required to wear respiratory protection. Researchers at the University of Cincinnati are collecting information on persons who:

1) Developed a medical complication while wearing a respirator, and
2) Identify pre-existing medical conditions causally related to the complication that developed.

If you have information (published or un-published) that establishes a link between a specific medical condition and a complication that developed as a result from wearing a respirator or during fit testing, please share this information with us. We're particularly interested in cases where a medical complication was induced by respirator use. Information such as the specific type of respirator worn, work environment, duration of use, level of physical exertion, underlying medical conditions that contributed to the complication, etc., is needed. You can send this information to:
info@DrMcKay.com

Training Opportunities



Respirator Training Courses:
Dr. McKay and the University of Cincinnati is pleased to announce the following Respirator Training programs. They are:

Overview of Respiratory Protection:
http://www.drmckay.com/rtc-overview.shtml
April 16, 2024
October 22, 2024

Fit Testing Workshop (2-day):
http://www.drmckay.com/rtc-workshop.shtml
April 17-18, 2024
October 23-24, 2024

Respirator Selection & Cartridge Change Out Schedule Workshop.
http://www.drmckay.com/rtc-resp_selection.shtml
May 14-15, 2024

Fit Testing Refresher & Advanced Topics
http://www.drmckay.com/rtc-resp-refresher-advanced.shtml
May 16, 2024

All courses are held in Cincinnati, unless noted otherwise. On-site training is available.

Respirator Selection & Change Out Schedules
This workshop provides guidance on respirator selection and the development of OSHA compliant change out schedules for respirator cartridges. A combination of lecture with practice problem sessions is used. The course is designed to teach students how to select a respirator based on workplace conditions (exposure level, type of contaminant, length of time to be worn, etc.). The selection process goes beyond the typical recommendation to "use a NIOSH approved air purifying respirator". Students will learn how to select a specific respirator as well as a specific filter/cartridge (when appropriate). More than a dozen guidelines for development of an OSHA compliant cartridge change out policy will also be taught, including common computer models and how to use them.

Partial Listing of Topics
Respirator Selection
* Review of facepiece definitions and modes of operation.
* Practical and theoretical basis for respirator selection based upon:
  Assigned Protection Factors (APF)
  - MUC's, HR's, IDLH, etc.
* OSHA guidelines for respirator selection.
  - IDLH and non-IDLH atmospheres.
* Selection steps and information gathering procedures.
* Minimum respiratory protection versus practical alternatives.
* Filter selection issues
  - How to select an N, R, or P filter.
  - Why filter selection is influenced by exposures below the exposure limit.
  - How to choose a 95 versus 100 filter.
* Practical methods for handling unknown concentrations without defaulting to an SCBA.
* Calculating MUC's for mixtures.
* Selection Workshop
  - Practical problems and solutions.

Development of Cartridge Change Out Schedules
* OSHA recommendations for a change out policy.
* Factors that affect cartridge service life.
* Learn how to develop an OSHA compliant change out schedule.
* Understanding the breakthrough curve.
* Common methods used to define breakthrough.
* What level of breakthrough should be used?
* Work rate tables.
* Effect of high relative humidity.
* Methods for determining service life (use, limitations, and practice problems)
  - OSHA recommendations
  - Rules of thumb
  - Using laboratory data
  - Using math models
  - Using computer (software) models
  - Cartridge testing methods (3 methods) Combining methods
* Learn how to develop a change schedule when computer models are not available.
* Recommendations for mixtures:
  - OSHA compliance method
  - mole fraction method
  - multi vapor model
* How to confirm your change-out schedule.
* Storage and migration concerns.
* Immediate Breakthrough Upon Reuse (IBUR) concepts

Gain confidence your current procedures are correct!

Fit Testing Workshop (2-days):
This two (2) day workshop provides comprehensive lecture and "hands-on" training for students who need to learn how to conduct an OSHA accepted qualitative or quantitative respirator fit test. Students will have an opportunity to fit test a variety of different style facepieces, including filtering

facepieces, half, & full. A combination of lecture and "hands-on" testing in the presence of a trained and experienced instructors will be used to help participants learn how to conduct respirator fit testing to satisfy regulatory requirements. Hands-on fit testing will include qualitative and quantitative methods. The following types of fit testing equipment will be available: Saccharin (sweetener) and Bitrex (bitter) qualitative fit test kits using squeeze-bulb nebulizers, including **QualFit**® software©. Quantitative fit testing with the TSI PortaCount, AccuFIT 9000, and the OHD QuantiFit©. Class size will be limited to ensure a favorable faculty to student ratio. Students will learn how to set-up, operate, maintain, troubleshoot, analyze, and interpret fit test results. Where appropriate, students will learn how to calibrate testing equipment and record results. All course materials, supplies, equipment, and reference manuals will be provided.

Students will also disassemble, reassemble, and inspect respirators for common problems. The workbook alone is a valuable reference for solving fit testing problems in the future.

This course uses a combination of lecture and small practicum groups to ensure students have ample time to practice and learn fit testing techniques. The second day provides students sufficient time to concentrate on the particular methods of interest to them. The "Hands-On" approach is emphasized in this course. Students will have the opportunity to fit test several different make and model respirators. The fit testing workshop provides an opportunity to see and experience many different types of commonly used fit testing methods (qualitative and quantitative).

Individuals who plan to attend the fit testing workshop, but have little or no experience with respiratory protection should take our 1-day "Overview" class, routinely offered before the fit testing workshop. A substantial discount is given when both courses are taken.

Dr. McKay is the past chair of the ANSI Z88.10 Respirator Fit Testing sub-committee, a voting member of the ASTM sub-committee on respirator fit test methods, the AIHA Respiratory Protection Committee, and others.

Fit Testing Refresher & Advanced Topics:

This 1-day course is specifically designed for the person who has been conducting fit tests, but has not had formal training or needs a review. This course reviews OSHA fit testing requirements and helps the operator understand **why poorly fitting respirators pass fit testing and why good fitting respirators fail**. It also provides an opportunity to discuss advanced topics not covered during a typical 2-day fit testing workshop due to time limitations. This course is also valuable for respirator program administrators who need a better understanding of fit testing procedures and assurance that their fit testing program is being run properly. The emphasis of this course is on quantitative fit testing, although many of the concepts are applicable to all fit test methods.

Partial Listing of Topics

- Review of fit test procedures
  - Facial hair: issues & solutions
  - Selection process
  - Comfort assessment
  - Interference with PPE
- Establishing pass/fail criteria
- Interpretation of fit test results
- Why user seal checks fail to detect leakage
- Why user seal checks create leaks not present
- Proper use of fit test adapters
- Selecting sample probe location
- Why leaking respirators pass fit testing
- Why good fitting respirators fail fit testing
- What does a high fit factor really mean?
- Wear time & non wear time issues
  - Understanding fit factor vs protection
- When is quantitative fit testing required?
- Opportunity to get answers to your questions

This course can also be given on-site.

Overview of Respiratory Protection:

This 1-day course provides a practical overview of respirators, standards, guidelines, use, and limitations of commonly used air purifying respirators. This class also provides an excellent overview of the OSHA Respirator Standard. Little or no prior formal training is required. The morning session includes lectures on the types and use of respirators and basic respirator selection procedures using APFs and MUCs. The advantages and disadvantages of different respirator facepieces, filters (N, R, & P), cartridges, PAPR's, and the physiologic effects of wearing a respirator will also be discussed. Respirator standards and program requirements will be reviewed to help the student comply with OSHA regulations. This class will help the student understand the most significant physiologic effects of wearing a respirator and OSHA requirements for respirator medical clearance. An introduction to qualitative and quantitative fit testing and seal check procedures will be covered (unless all attendees are participating in the fit testing workshop, where these topics will be covered more comprehensively). This course is essential for those individuals who oversee respirator users in their work place or new to respiratory protection.

Respirator Training at Your Location:
A variety of respirator training programs are available on-site. Courses available include:
* Fit Testing Refresher & Advanced Topics
* How to Develop a Cartridge Change Out Schedule (1 day)
* Respirator Selection (1 to 1.5 days)
* Fit Testing for Health Care Professionals (1 day)
* Basics of a Respiratory Protection Program (2 days)
* Overview of Respiratory Protection (1 day)
* Respirator Fit Testing: Quantitative (1 or 2 days)
* Respirator Fit Testing: Qualitative (1day)
* Fit Testing at your workplace. Not a course, but a hands-on program with your staff and equipment.

2023 McKay Publications

R Metzler, D Spelce, J Johnson, C Coffey, T Rehak, **R McKay**

A Good Seal - Why Respirator Fit Testing is Essential for Filtering Facepiece Respirators. The Synergist, Pages 28-30, October, 2023.

2023 McKay Presentations

An Overview of Respiratory Protection for Public Health Employees.

An 8 hour presentation given to Hazard Evaluations and Technical Assistance Branch (HETAB), Division of Field Studies and Engineering (DFSE), National Institute for Occupational Safety and Health (NIOSH), in Cincinnati, OH on July 17, 2023.

Voluntary Use of a Respiratory Protection and Common Fit Testing Errors

Presented to the American Society of Safety Professionals - Southwestern Ohio Chapter. 2 hours. Zoom presentation. October 10, 2023.

Recent Changes to ATS-ERS Spirometry Standards from an Occupational Perspective

Presented to the Tri-State Occupational Medicine Association (TSOMA) Annual Education Conference in Cincinnati, Ohio on October 27, 2023.

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Roy McKay, Ph.D.
University of Cincinnati
www.DrMcKay.com

Dr. McKay has approximately 40 years of national and international experience in all areas of respiratory protection including **research, teaching, clinical practice, peer reviewed publications, and consultation** as a faculty member at the University of Cincinnati. Dr. McKay is past chair of ANSI/AIHA Z88.10 (now ASTM), the committee responsible for "*Respirator Fit Test Methods*" and a member of ANSI/ASSE Z88.2-2015, which published the "*American National Standard - Practices for Respiratory Protection*". Respirator committee assignments also include the American Industrial Hygiene Association's Respiratory Protection committee. He has conducted respirator fit testing, training, and consultation services for governmental agencies, including OSHA, NIOSH, NPPTL, CDC, private industry, and respirator manufacturers. He's developed more than a dozen different continuing education courses on respiratory protection, which include fit testing, respirator selection, cartridge change out, program administration, filter penetration, protection factors, and other topics.

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