

Respiratory Protection and Fit Testing

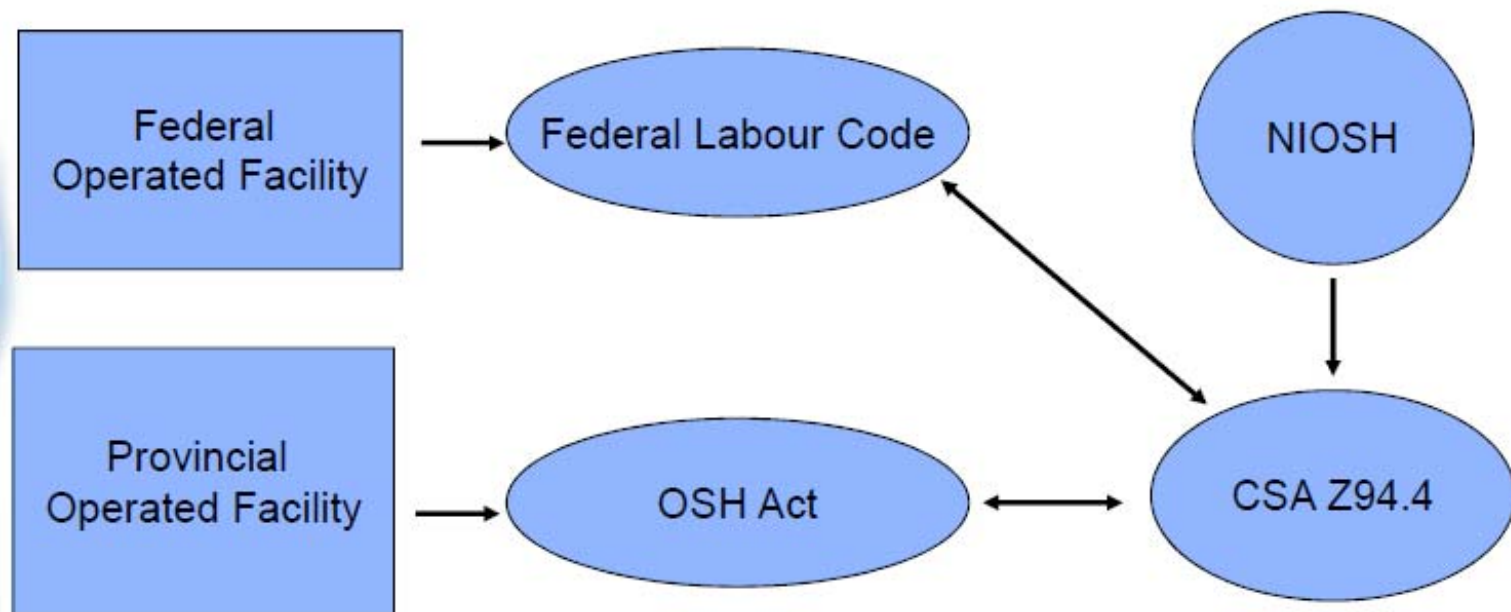


3M Personal Safety Division

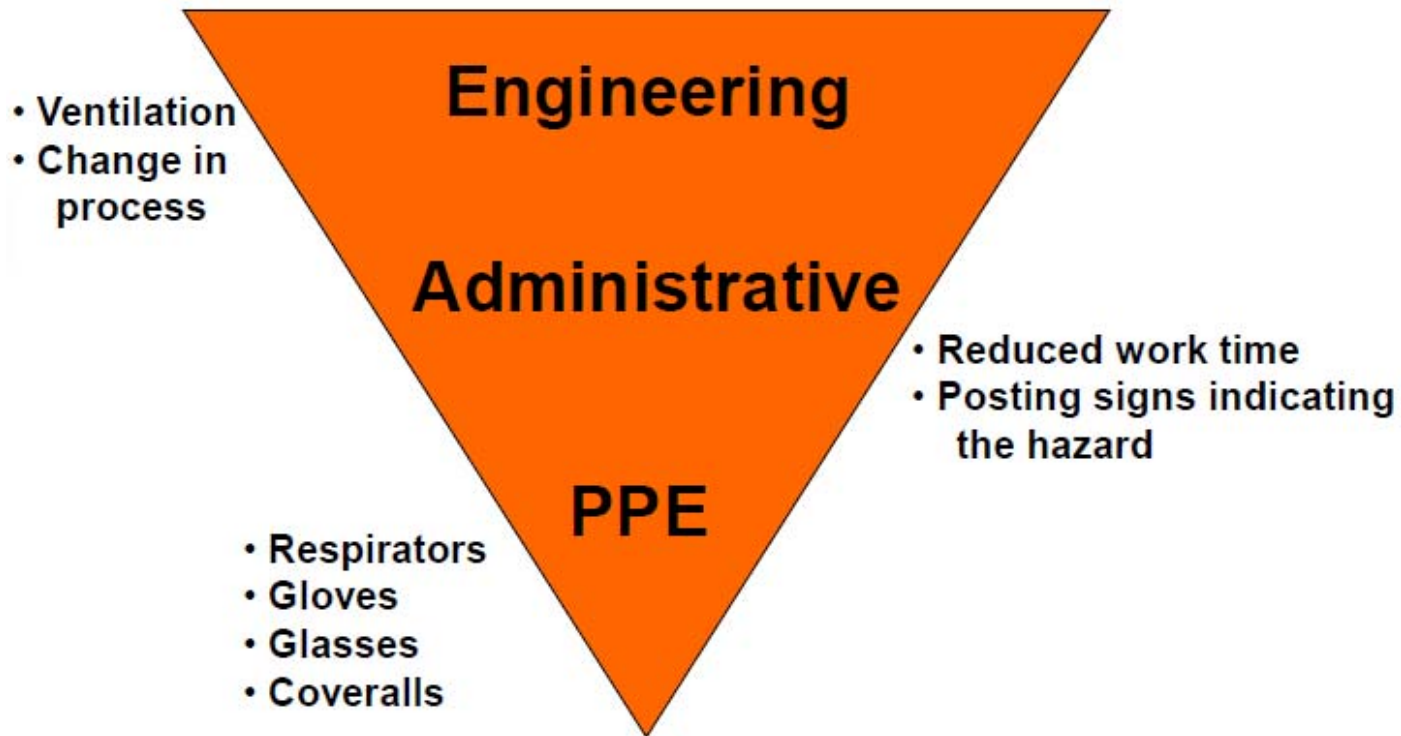
3M™ HALF FACEPIECE REUSABLE RESPIRATORS

3M

Legislative Overview



Controls



Forms of Contaminants

PARTICULATES



DUST



FIBER



MIST



BIOLOGICAL

Virus/bacteria/mold, etc.



FUME

GAS / VAPOUR



GAS



VAPOUR

Filter/Cartridge Protection

PARTICULATES



DUST



FIBER



MIST



BIOAEROSOL

Virus/bacteria/mold, etc.



FUME

FILTERS

GAS / VAPOUR



GAS



VAPOUR

CARTRIDGE

Color Coding for Chemical Cartridges

Cartridge Type	Colour
Organic Vapour	Black
Acid Gases (ie. Chlorine, Hydrogen Sulfide)	White
Organic Vapour/Acid Gases	Yellow
Ammonia / Methylamine	Green
Formaldehyde	Olive Green
Multi-Gas and Vapour	Khaki Green
Mercury Vapour / Chlorine Gas	Orange



ESLI for Hg

ESLI = End of Service Life

Replacement Criteria - Cartridge

Cartridge

- Physically damaged
- ~~When you detect smell, taste, or irritation*~~
- Regular change out schedule



New – Z94.4-11: Warning properties of the contaminant shall not be relied on for cartridge/canister change-out.

Respirator Selection

1. What is the Hazard?

- Air sampling to provides contaminant concentration level

2. What is the OEL? (Occupational Exposure Limit)

- Chlorine
- TWA (over 8 hrs) = 0.5 ppm
- STEL (15 mins) = 1 ppm
- CEILING (Instantaneous Exposure) = 1 ppm
- Odour threshold = 0.05 ppm

3. What is the APF (Assigned Protection Factor) of the Respirator?

$$\text{OEL} \times \text{APF} > \text{Concentration Level}$$

Types of Respirators

Disposable



Negative pressure
Tight-fitting
APF = 10x OEL

Reusable Half-Face



Negative pressure
Tight-fitting
APF = 10x OEL

Reusable Full-Face



Negative pressure
Tight fitting
APF = 10x OEL

Powered Air



Positive pressure
Loose-fitting
APF = 25x OEL

If concentration < 1 ppm

If concentration \geq 1 ppm

Fit Testing

- Why do it?
- What is it?
- Who needs it?
- How often is it required?

Qualitative or Quantitative Testing



Qualitative



Quantitative

Qualitative Fit Test Kit



Respirator Interference Concerns

Fit testers SHALL follow the requirements of the program and may NOT perform a fit test if any of the following are observed:

- **Facial Hair**
 - Clean shaven within the previous 24hr or preferably 12hrs
- **Personal Conditions**
 - Be fit tested in the same condition as you work e.g. Dentures, eye glasses, hair style
- **Personal Effects or Accessories**
 - No items shall come between the skin and the sealing surface
 - e.g. Head coverings, garments, facial jewelry
- **PPE Integration**
 - All additional PPE to be worn during fit testing

Step 1: Sensitivity Test

- To ensure the subject is able to taste the challenge agent (diluted saccharin or bitrex solution)
- Sensitivity Levels:
 - S10 = Solution tasted between 1 - 10 squeezes
 - S20 = Solution tasted between 11 - 20 squeezes
 - S30 = Solution tasted between 21 – 30 squeezes

Step 2: Fit Test

- Use saccharin (sweet) or bitrex (bitter) solution
- Series of 7 Exercises – 30 seconds each:
 - Normal breathing
 - Deep breathing
 - Head side to side
 - Talking
 - Bending over
 - Normal breathing

Thank you! Any Questions?



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