Department of Environmental Health

Sheriff Detentions

Health & Human Services Agency

Tuberculosis Overview & Respirator Training February 9, 2018

County of San Diego Health and Human Services Agency & Department of Environmental Health

COUNTY OF SAN DIEGO
HEALTH AND HUMAN SERVICES AGENCY
PHS
Public Health Services
TB CONTROL AND REFUGEE HEALTH

Tuberculosis (TB) Respirator Training
(Filtering-facepiece respirators)

- Introduction
- TB Disease
- Respirators
- Fit Testing

Question:
Is anyone eating or drinking something now?

PLEASE STOP

It will interfere with your respirator fit test.

Occupational Health Program

What do we do?

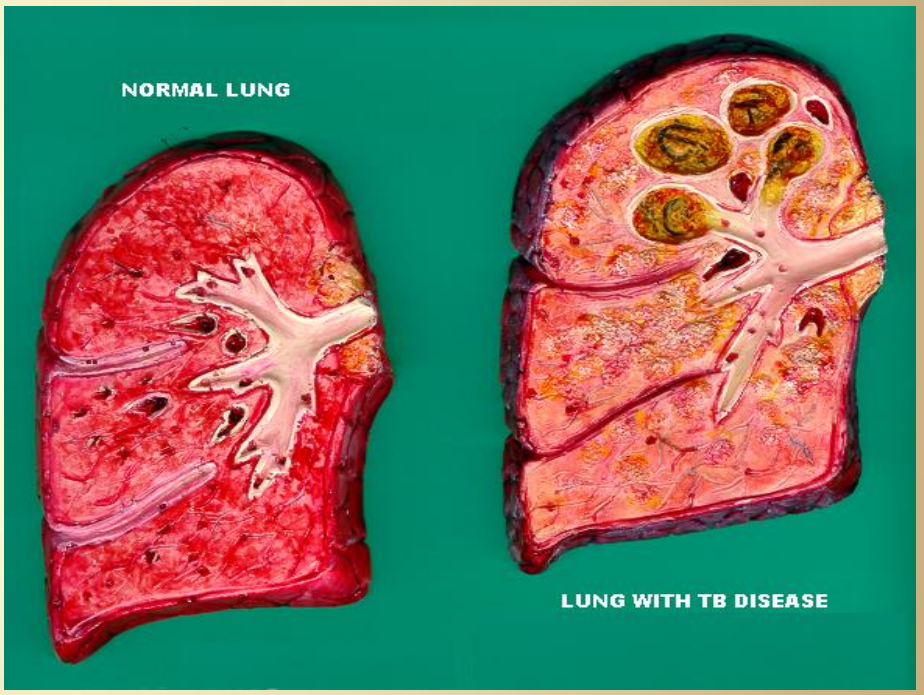
- Health & Safety Consulting to County Dept's
- County Employees
- Public
- You can reach us at 858-694-2888

County TB Control Branch

- Contact us at 619-692-8610

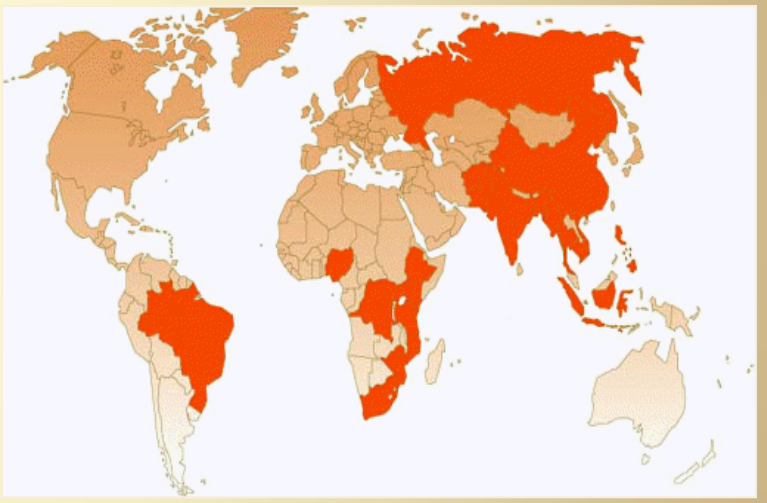
What is Tuberculosis?

- Infectious disease
- Caused by the bacteria *M. tuberculosis*
- Infects lungs and/or other body organs
- Latent and active phases
- Treatable and curable with antibiotics



TB Worldwide

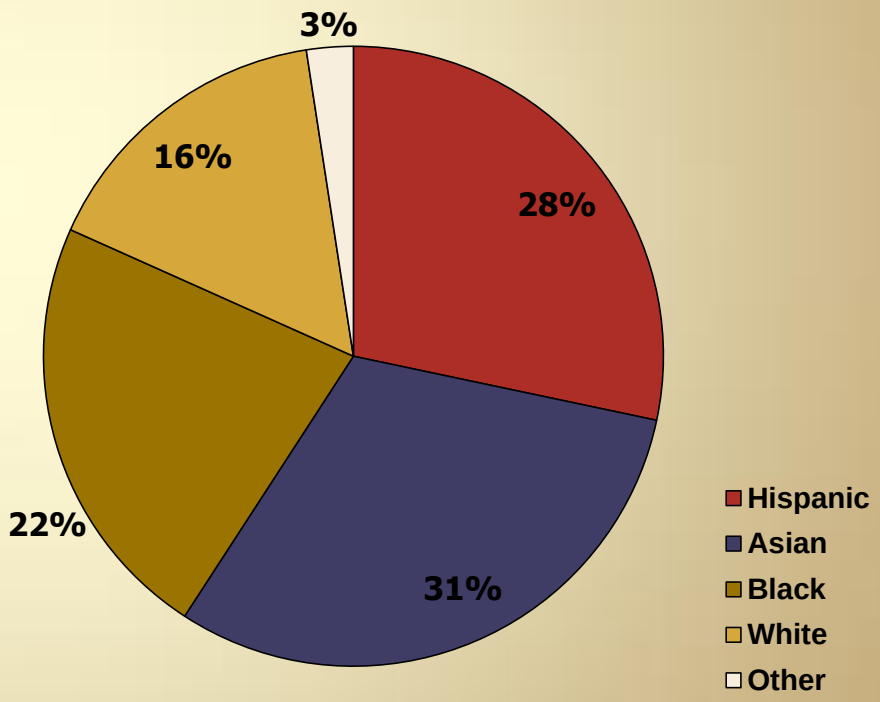
- 1/3 of population is infected
- 10+ million new cases/year
- Nearly 2 million deaths/year
- More common in Latin America, Asia, Africa, Russia



TB Disease in the United States

In 2016:

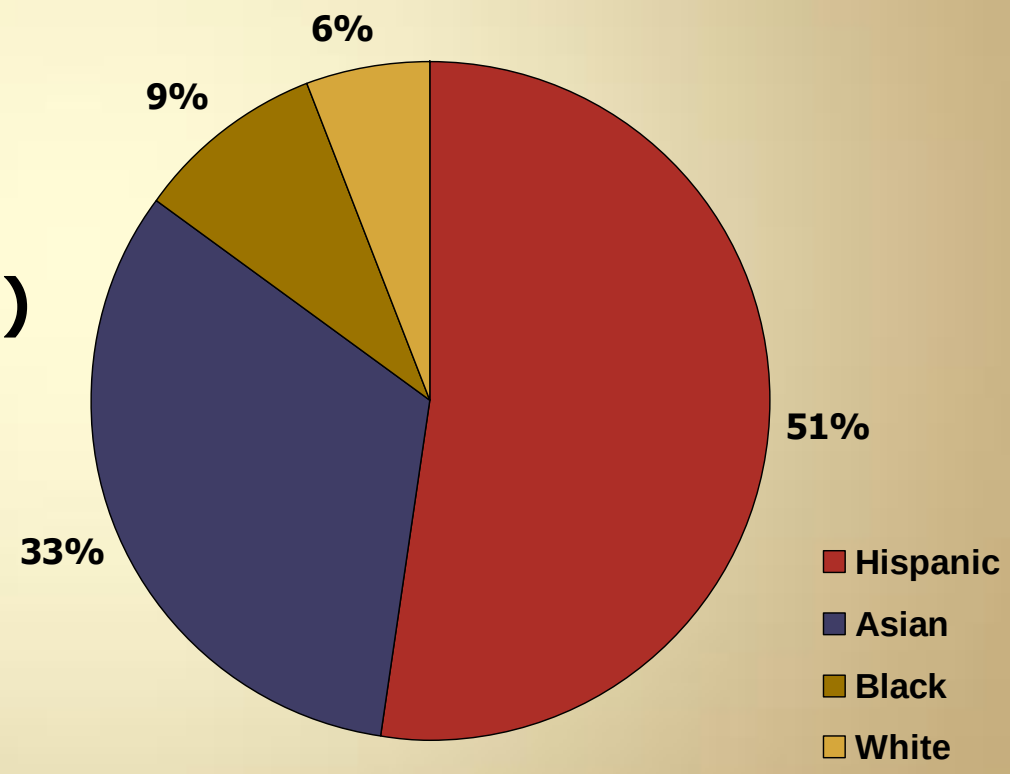
- 9,557 cases
- 6,300 foreign-born (66%)



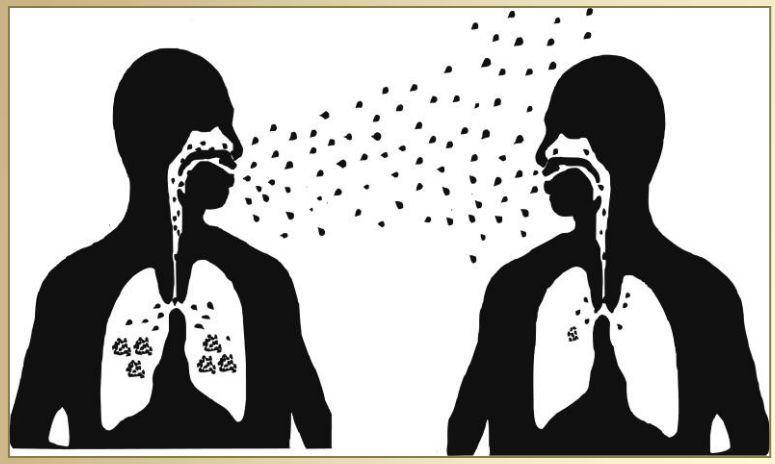
Active TB Disease
San Diego County

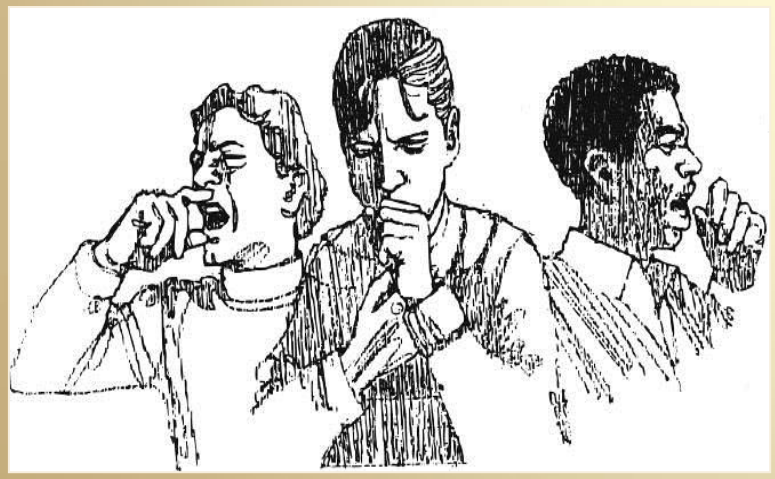
In 2017:

- **237 cases**
- **165 foreign-born (70%)**



How do you get TB?: Transmission





- **Airborne: prolonged, repeated exposure**
- **Spread by droplet nuclei (1-5 um in size)**
- **Expelled when person with infectious TB coughs, sneezes, speaks, or sings**
- **One cough can produce 3,000 droplets.**
- **Close contacts at highest risk of becoming infected**
- **Transmission occurs from person with infectious TB disease**
- **MOST exposed do NOT catch TB**
- **TB is NOT spread by food, insects or objects**

How is tuberculosis diagnosed?

- Step 1: TB skin test
  - Tuberculin liquid injected just under top layer of skin
  - Must have skin test read 48-72 hours after injection
- Or, QuantiFERON-Gold blood test
- Step 2: Chest x-ray
- Step 3: Medical evaluation

What does the TB test tell?

Negative

- Not infected
- Other reasons
  - Immune system not working properly
  - Too soon after exposure
  - Read incorrectly
- No follow-up OR may need repeat

Positive

- Infected

Skin Test: 10 mm and > (Except HIV Infected, known Exposure 5 mm and >)
Blood Test: >= 0.35 IU

- Other reasons
  - BCG Vaccine
- Follow-up
  - Chest x-ray
  - Doctor exam

BCG Vaccine

- Given to children to prevent serious types of TB
- Does not prevent people from getting TB infection or disease
- BCG loses effect over time
- Inform your medical provider if and when you received the BCG vaccine

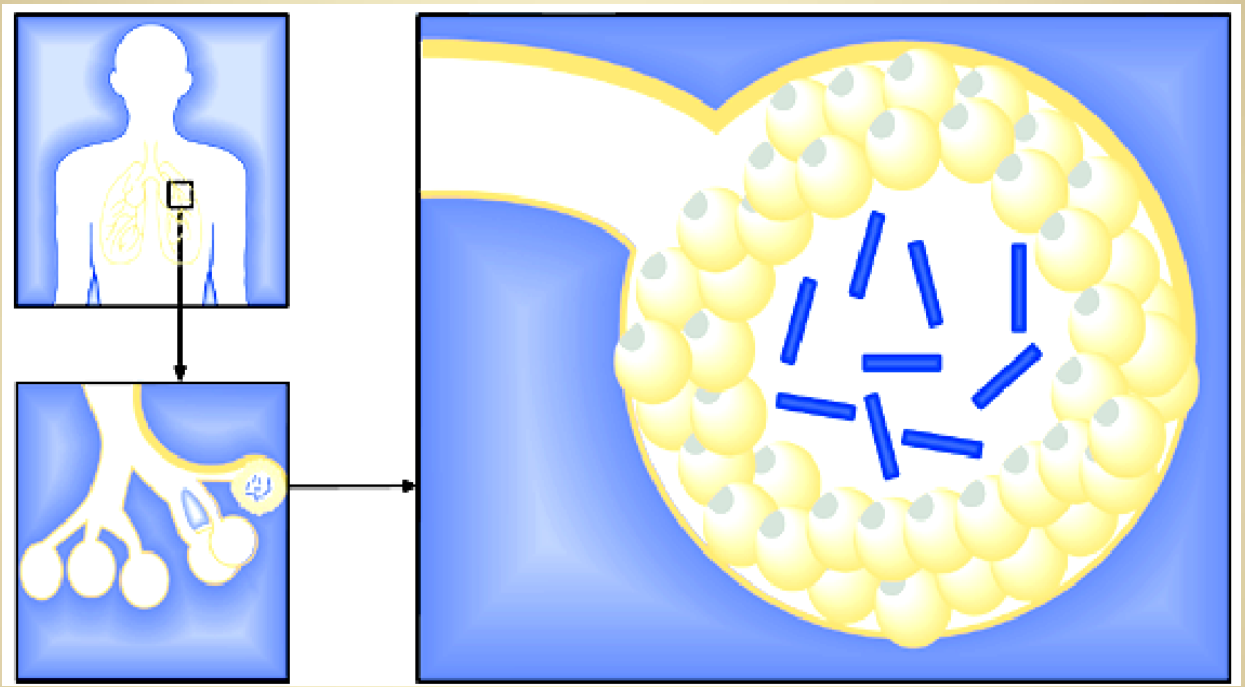
QuantiFERON-Gold (IGRA)

- Less subject to reader bias & error
- QFT does not become positive due to BCG.

Persons at Higher Risk for TB Infection

- Close contacts to someone with known or suspect TB
- Foreign-born persons or people who travel frequently to high to moderate risk places
- Users of high-risk substances
- Residents and employees of high-risk settings
- Some medically underserved, low income populations
- Infants, children, and adolescents exposed to adults in high-risk categories
- Health care workers who serve high-risk clients

Latent TB Infection (LTBI)



- Body walls off TB germs
- TB germs not active
- Person is not sick
- Cannot spread TB

What happens if you become infected?

- Most people never get sick
- 10% will get sick over a lifetime
- However, there is an increased risk if:
  - Recent infection (first two years)
  - Young age (5 years or younger)
  - Elderly population
  - Weak immune system

Treatment: Latent TB Infection (LTBI)

Isoniazid (INH)

Given to people with TB infection to reduce risk of developing active TB disease.

- **Medication**
  - Antibiotic
    - Isoniazid (INH)
- **Length of time**
  - 9 months/Daily

New (shorter) Treatment for LTBI

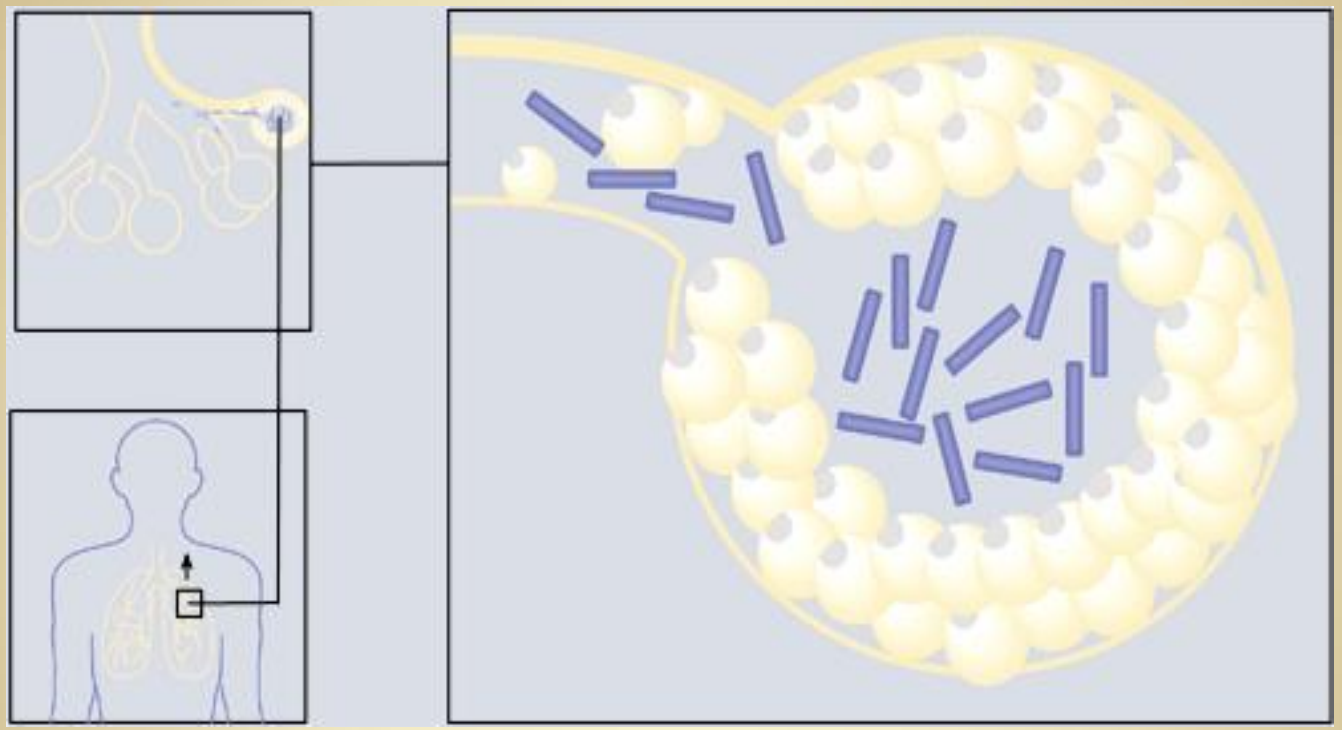
- The 12-Dose Regimen for Latent Tuberculosis (TB) Infection
- To treat your infection, your doctor recommends you take **rifapentine** and **isoniazid** once a week, for 12 weeks.
- Not recommended for children less than 2 years old, pregnant women or women who expect to become pregnant during treatment, or persons living with HIV taking antiretroviral therapy.
- DOT (Directly Observed Therapy) only.

Sensitivity Test

Persons at Higher Risk of Developing TB Disease

- Persons with HIV infection
- Persons infected with *M.tb* within the last 2 years, especially infants and children
- Persons with certain medical conditions (such as diabetes, cancer, kidney disease)
- Users of high-risk substances
- Persons with a history of improperly treated TB

Active TB Disease



- TB germs become active, break out and multiply
- The person is usually symptomatic
- May be able to spread TB germs

Symptoms of Active TB Disease

- Cough
- Coughing up sputum or blood
- Weight loss
- Feeling weak or sick
- Fever
- Night Sweats
- Chest pains

Treatment: Active TB Disease

Directly Observed Therapy (DOT)

- **Medication**
  - Multiple antibiotics
    - Isoniazid (INH)
    - Rifampin (RIF)
    - Pyrazinamide (PZA)
    - Ethambutol (EMB)
- **Length of time**
  - Minimum of 6 months (+)

TB Case Management

All TB cases are assigned a Public Health Nurse (PHN) Case Manager to review the patient progress and address barriers to adherence.

- Establish treatment plan and monitor adherence
- Provide patient education
- Ensure continuous therapy for a successful treatment outcome
- Identify, notify and examine close contacts
- Works closely with Communicable Disease Investigators

TB Infection vs. TB Disease

	Latent Infection	Active Disease
Skin test (+)?	Yes	Usually
Chest x-ray	Normal	Abnormal
Effects on Health	None	Usually symptomatic
Can spread TB?	No	Sometimes
Treatment	Recommended	Yes

TB Respirators

Who can you talk to with respirator questions?

- **Sheriff**
  - Infection Control Staff/Correctional Nurses
  - Respiratory Protection Administrator
  - Supervisors
  - Sheriff Risk Management

- **County Industrial Hygienists – OHP**
  Contact at (858) 694-2888

- **County TB Control Branch**
  Contact at (619) 692-8610

Who approves respirators?

- NIOSH - National Institute of Occupational Safety and Health
- Sheriff Respirator Administrator
- County approval - OHP

When are you supposed to use respirators?

Respirator use is REQUIRED in areas where there is an increased risk of exposure:

WHEN & WHERE DO YOU USE YOUR RESPIRATOR?

TB Respirators should be used in the following areas:

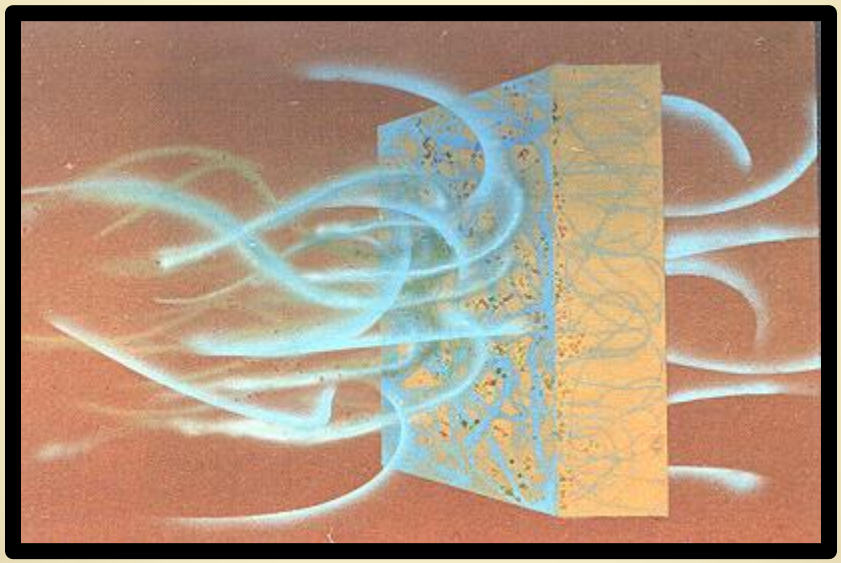
- TB isolation rooms (AIIR's)
- Anterooms
- Transportation of prisoners (known or suspect cases)
- Rooms where cough-inducing procedures are done
- Other prolonged close proximity to known or suspected TB case
- Ask about other situations (and other diseases)

Different Types of Air Purifying Respirators (APR)

- *Particulate/aerosols* - filters dust, fume, mists, and fibers
  - Filtering facepiece respirators
  - Other types

- *Gas/Vapor* – chemically neutralizes specific contaminants or classes of gases/vapors

How do N-95 or other particulate respirators work?



Respirator Filter Classes

- There are 9 classes of filters
- Levels of filter efficiency are: 95%, 99%, & 99.97% (100)
- Categories of resistance to filter efficiency degradation due to oil mist are labeled N, R, and P:

N for *N*ot resistant to oil

R for *R*esistant to oil

P for oil *P*roof

- For example, N95 or P100

Limitations – Do not use N-95 respirators when….

- The area is oxygen (O2) deficient
  (Do not enter when there <19.5% O_2)
- There are chemical gases/vapors present. This respirator does not protect against chemicals
- Only for approved uses

Hands-On Session

- Pass out respirators to everyone

Do "the inspection" before and after using your respirator?

- Make sure it is **NIOSH** approved
- **Inspect** facepiece for integrity and function
- **Check** straps for damage
- If applicable, ensure metal nose clip is in place and has been **formed to fit** over your nose

Replace your TB respirator when:

- Damaged
  - Cuts, nicks, abrasions or creases
  - Missing or loss of elasticity in straps
- Wet
- Soiled or Dirty
- Doesn’t fit correctly

Respirator Storage

- Store respirators so that the facepiece is in the normal relaxed position (not squished)

- Never store disposable respirators in pockets, plastic bags (unless dry), or other confined areas

What effects the fit (and fit testing)?

- Facial hair
- Injury to Face
- Surgery
- Glasses
- Weight Loss/Gain

Beard

+

Respirator

= **Does Not Work!**

Purpose of Fit Testing

- Before an employee uses any respirator, they must be fit tested with a respirator that is:
  - **the same make,**
  - **model,**
  - **style,**
  - **and size**

…….that will be used.

Fit Testing