Respiratory Fit Testing in Agricultural Communities

…HELPING FIGHT THE ENEMY WE CANNOT SEE

STATE OF SCIENCE - 2020

SEPTEMBER 18, 2020

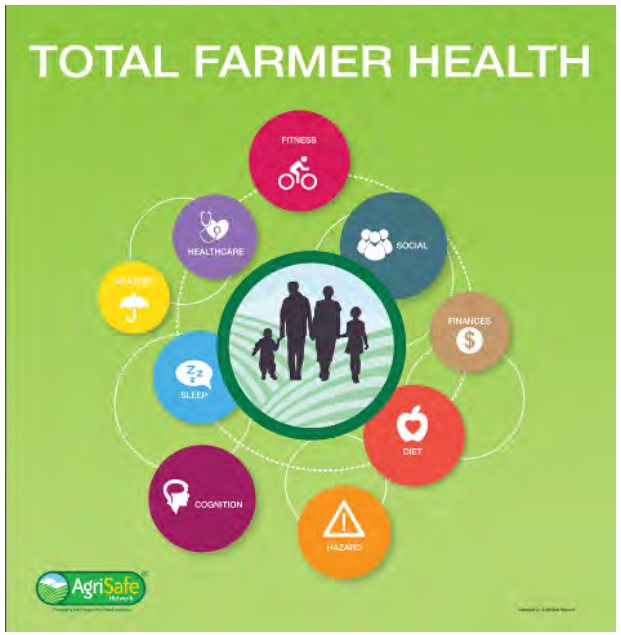
AGRISAFE NETWORK

CHARLOTTE HALVERSON BSN,COHN-S

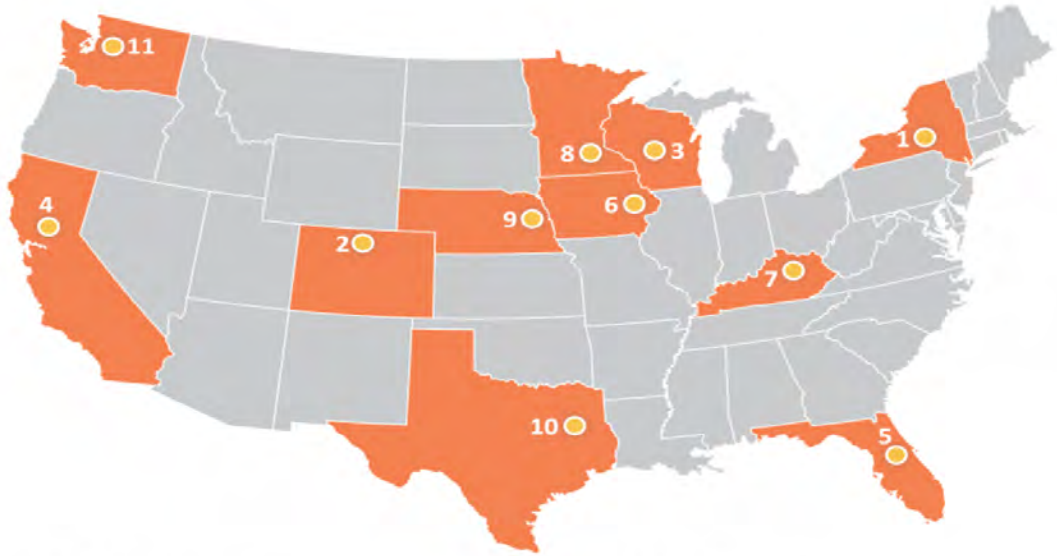
CLINICAL DIRECTOR, AGRISAFE NETWORK

AFFILIATE
TOTAL WORKER HEALTH
ADVANCING WORKER SAFETY, HEALTH, AND WELL-BEING
NIOSH

CDC/NIOSH partnership



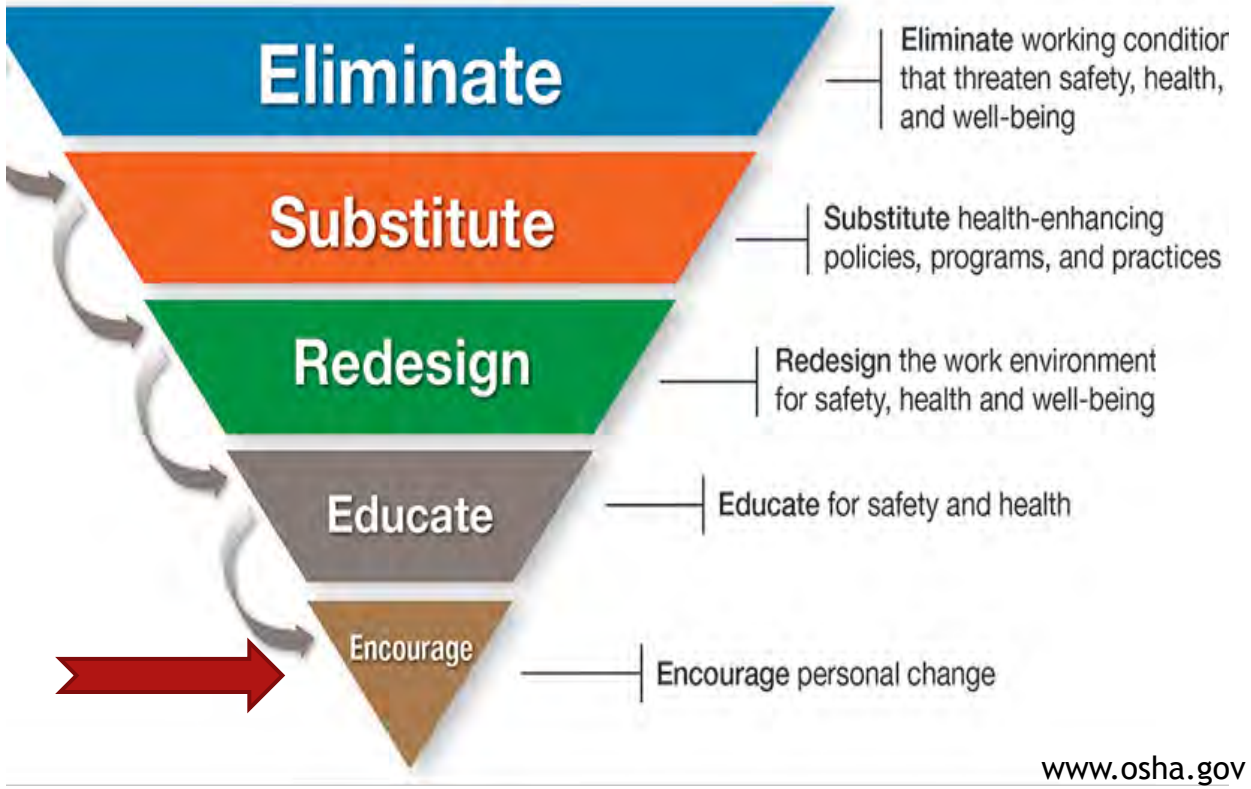
NIOSH Centers for Agricultural Safety and Health



1. Bassett Healthcare
2. Colorado State University
3. National Farm Medicine Center
4. University of California, Davis
5. University of Florida, Gainesville
6. University of Iowa
7. University of Kentucky
8. University of Minnesota
9. University of Nebraska Medical Center
10. University of Texas Health Science Center, Tyler
11. University of Washington

Safety Considerations – What Can We Do?

Engineer dangers out of environment if possible!



Personal protective equipment - **<u>may be only feasible solution</u>**
The last line of defense!

www.osha.gov
http://www.cdc.gov/niosh/twh/totalhealth.html

Know Your Exposures – There are Many!

Gas	Health Effects		
	Low	Medium	High
Hydrogen Sulfide (H_2S)	2-20 ppm: nausea, headache, dizziness	100-300 ppm: altered breathing, fluid in lung	500-700 ppm: collapse, death
Methane (CH_4, LEL)	< 0.1% (1000 ppm): Not harmful	< 1% (10,000 ppm): No known toxicity	< 5% (50,000 ppm): Explosive
Ammonia (NH_3)	5-20 ppm: odor, eye irritation	20-50 ppm: Moderate eye and upper respiratory tract irritation	2500 ppm: chemical pneumonitis, edema, cyanosis, death
Carbon Dioxide (CO_2)	600-1000 ppm: odor, muscle stiffness	1000-2500 ppm: general drowsiness; 5000 ppm: 8-hr maximum	30,000 ppm (3%): increased pulse rate, nausea, impairment
Carbon Monoxide (CO)	<9 ppm: comfortable living concentration (35 ppm = 8-hr allowable)	200 ppm: headache, dizziness, nausea in 2 hours	400 ppm: life threatening in 3 hours

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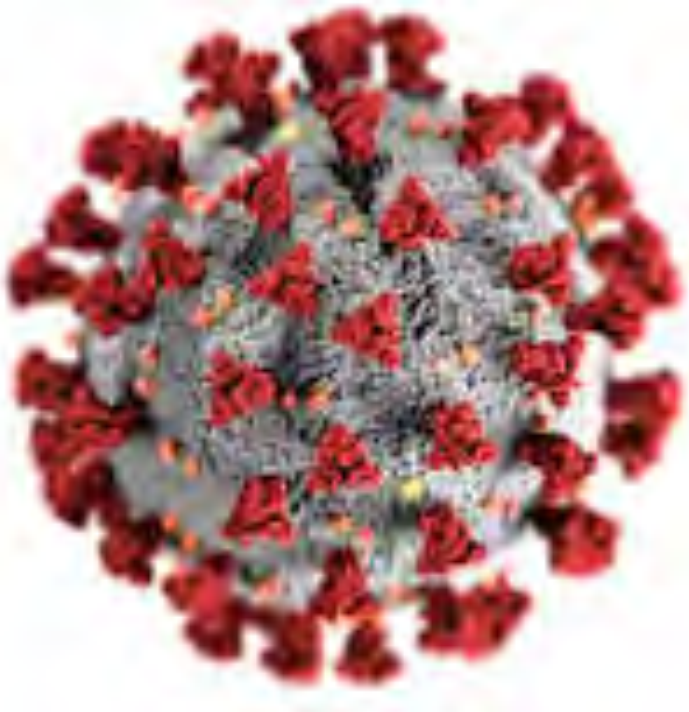

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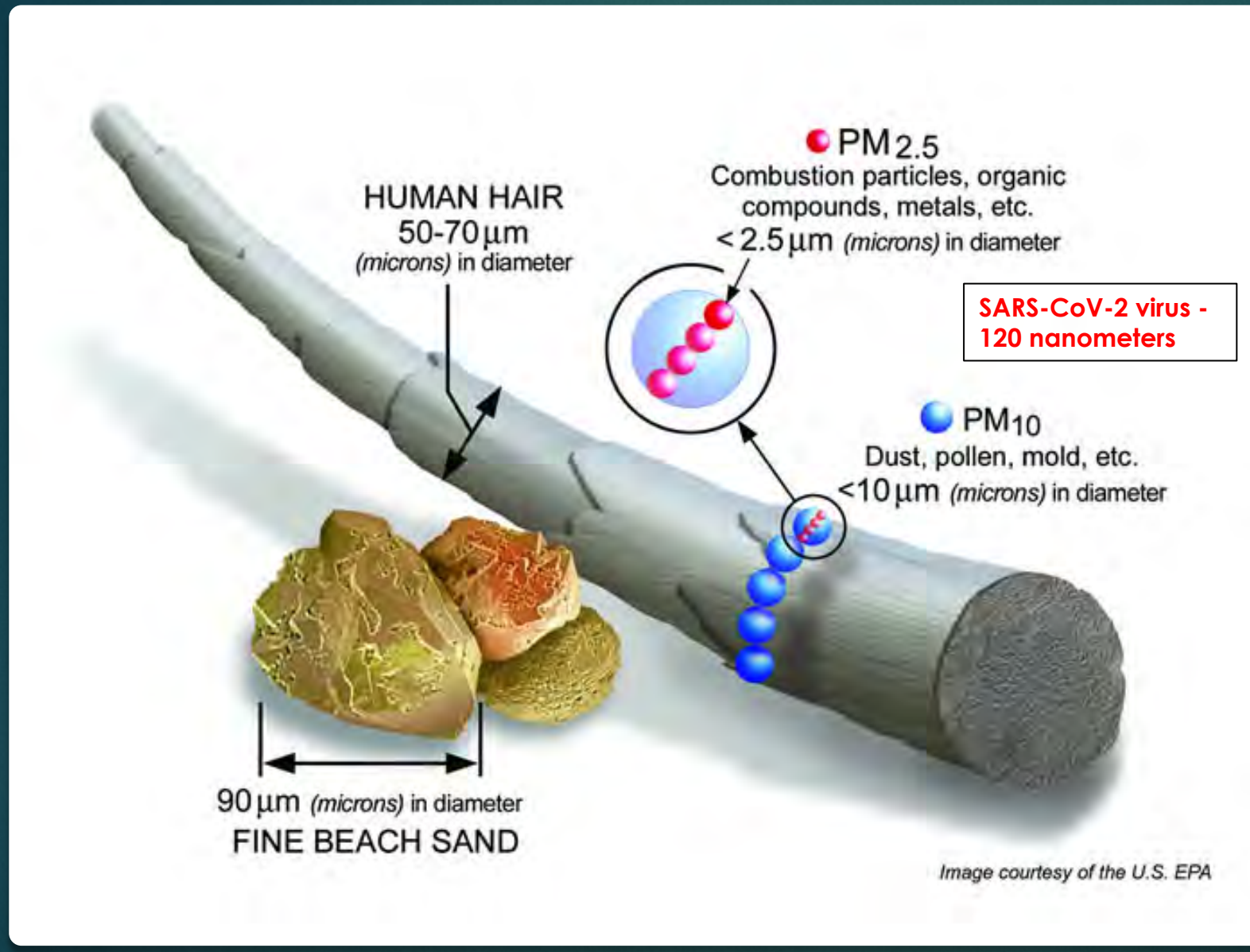

Seal Check (Fit check) Procedure: an employee(**wearer)** responsibility – and is done ***each*** time a respirator is used

POSITIVE PRESSURE CHECK

NEGATIVE PRESSURE CHECK

Very Important!

Seven Steps to Correctly Wear a Respirator at Work

Following these simple steps will help you properly put on and take off your respirator, and keep you and everyone else safe.

❶ Wash Your Hands

Wash your hands with soap and water or alcohol-based hand rubs containing at least 60% alcohol.

❷ Inspect the Respirator

Inspect the respirator for damage. If it appears damaged or damp, do not use it.

❸ Put on the Respirator

Cup the respirator in your hand with the nosepiece at your fingertips and the straps hanging below your hand.

Cover your mouth and nose with the respirator and make sure there are no gaps (e.g., facial hair, hair, and glasses) between your face and the respirator.

Place the strap over your head and rest at the top back of your head. If you have a second strap, place the bottom strap around your neck and below your ears. Do not crisscross straps.

If your respirator has a metal nose clip, use your fingertips from both hands to mold the nose area to the shape of your nose.

❹ Adjust the Respirator

Place both hands over the respirator. Inhale quickly and then exhale. If you feel leakage from the nose, readjust the nosepiece; if leakage from the respirator edges, readjust the straps.

Repeat until you get a proper seal. If you can't get a proper seal, try another respirator.

❺ Wear the Respirator

Avoid touching the respirator while using it. **If you do, wash your hands.**

Note: If you reuse your respirator, wear gloves when inspecting and putting on the respirator. Avoid touching your face (including your eyes, nose, and mouth) during the process.

❻ Remove the Respirator

Wash your hands.

Remove the respirator from behind. Do not touch the front.

❼ Dispose of the Respirator

If the respirator does not need to be reused because of supply shortages, discard it in a closed-bin waste receptacle. Wash your hands.

For more information, see the quick video, "Putting On and Taking Off a Mask". ▶

OSHA® Occupational Safety and Health Administration
www.osha.gov

1-800-321-OSHA (6742)
TTY 1-877-889-5627

https://www.osha.gov/Publications/OSHA4015.pdf

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Helping You Wear it Right

Wearing Your Filtering Facepiece Respirator

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Pull the top strap over your head until it rests on the crown of your head above your ears.

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Pull the bottom strap over your head until it rests just below your ears.

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Using both hands starting at the top, mold the metal nose clip around your nose to achieve a secure seal.

⚠WARNING

Respiratory Products

These respirators help protect against certain airborne contaminants. Before use, the wearer must read and understand the user instructions provided as a part of the product packaging. A written respiratory protection program must be implemented meeting all the requirements of OSHA 1910.134 including training, fit testing and medical evaluation. In Canada, CSA standards Z94.4 requirements must be met which requirements of the applicable jurisdiction, as appropriate. **Misuse may result in sickness or death.** For proper use, see packaging instructions, supervisor, or call 3M OH&ESD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.

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St. Paul, MN 55144-1000

Please recycle. Printed in U.S.A.

70-0707-4736-6

Check the Seal of Your Filtering Facepiece Respirator Each Time You Don the Respirator.

Positive Pressure User Seal Check

For Non-Valved Respirators

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Negative Pressure User Seal Check

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3M

Filtering Facepiece Fit Test

Fit Testing is required <u>if</u>:

- your employer requires the use of respirators.
- you (the employee) are exposed above the OSHA permissible exposure levels (PELs)of particulate or aerosol.

If workers wear these respirators on a <u>voluntary</u> basis <u>NO</u> fit testing is required.

Type of Fit Testing

- **Quantitative**
  - Portacount test

- **Qualitative (pass/fail)**
  - Bitrex, Saccharin.

  Use OSHA approved fit test protocols (Appendix A to § 1910.134: Fit Testing Procedures)

  Available on OSHA.gov website

OSHA Fit Test Guidelines (in part)

Important Points to know prior to testing!

- The person being tested shall conduct a user seal check (fit check).
- A valid test can not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.
- ***If the person being tested exhibits difficulty in breathing during the tests, she or he shall be referred to a licensed health care professional to determine whether the test subject can wear a respirator.***
- The fit test should be performed while the person being tested is wearing any safety equipment that may be worn during actual respirator use.

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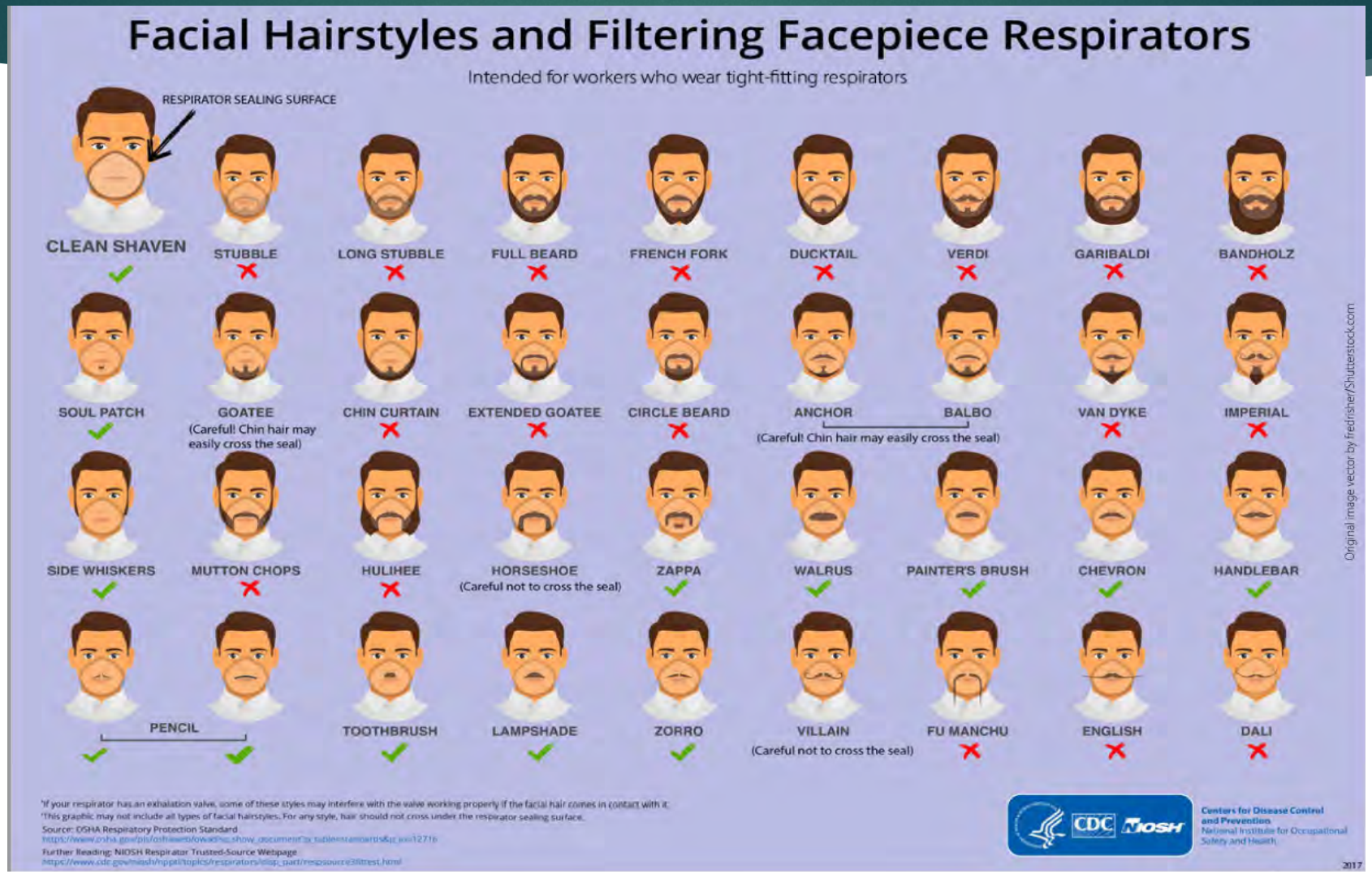

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Before an employee uses any respirator with a tight-fitting face piece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.

No respirator fits everyone and every face - if it doesn't fit...it doesn't work!

Fit Test Solutions for Qualitative Fit Testing

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Saccharin Solution – most common

Bitter solution (Bitrex)

- The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the same saccharin test protocol because that protocol is widely accepted.
- Note: Bitrex is routinely used as a taste aversion agent in household liquids to help protect children - and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers.

➢ **Irritant Smoke –**

- Not as common
- Use HEPA (P100) filters
- Only use in well ventilated area
- Not as subjective as saccharin or bitter

➢ **Isoamyl Acetate - Banana Oil**

- Use organic vapor cartridges
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- Depends on sense of smell

Translate Medical Evaluation to OSHA Exempt Agriculture

- **Best Management Practice for Clinicians**
  - Use OSHA medical evaluation guidelines
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  - Ask questions related to work environment, general health, history of respiratory or cardiac conditions
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https://www.xosafety.academy/courses/performing-respirator-fit-tests

https://www.3m.com/3M/en_US/safety-centers-of-expertise-us/respiratory-protection/fit-testing/

Pesticide Applicators

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- Pesticide applicators and handlers are required to wear respirators if the pesticide label calls for them to do so. Therefore, applicators and handlers need to have had respirator medical evaluation and respirator fit test prior to working with pesticides.

- **Which pesticides require respirators?**
- Read and make sure you understand the labels of the pesticides you may use. The label of the pesticides will state if a respirator is required and is based on class of pesticide and application method (drench, spray etc.).

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- during a pandemic!

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What about pesticide respiratory protection availability?
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OSHA Interim Enforcement Response Plan
https://www.oshalawblog.com/2020/04/articles/osha-interim-enforcement-response-plan-for-covid-19-matters/

EPA Temporary Guidance on Respiratory Protection in Agriculture
https://www.epa.gov/pesticides/epa-releases-temporary-guidance-respiratory-protection-agricultural-pesticide-handlers

Reviewed June 1, 2020

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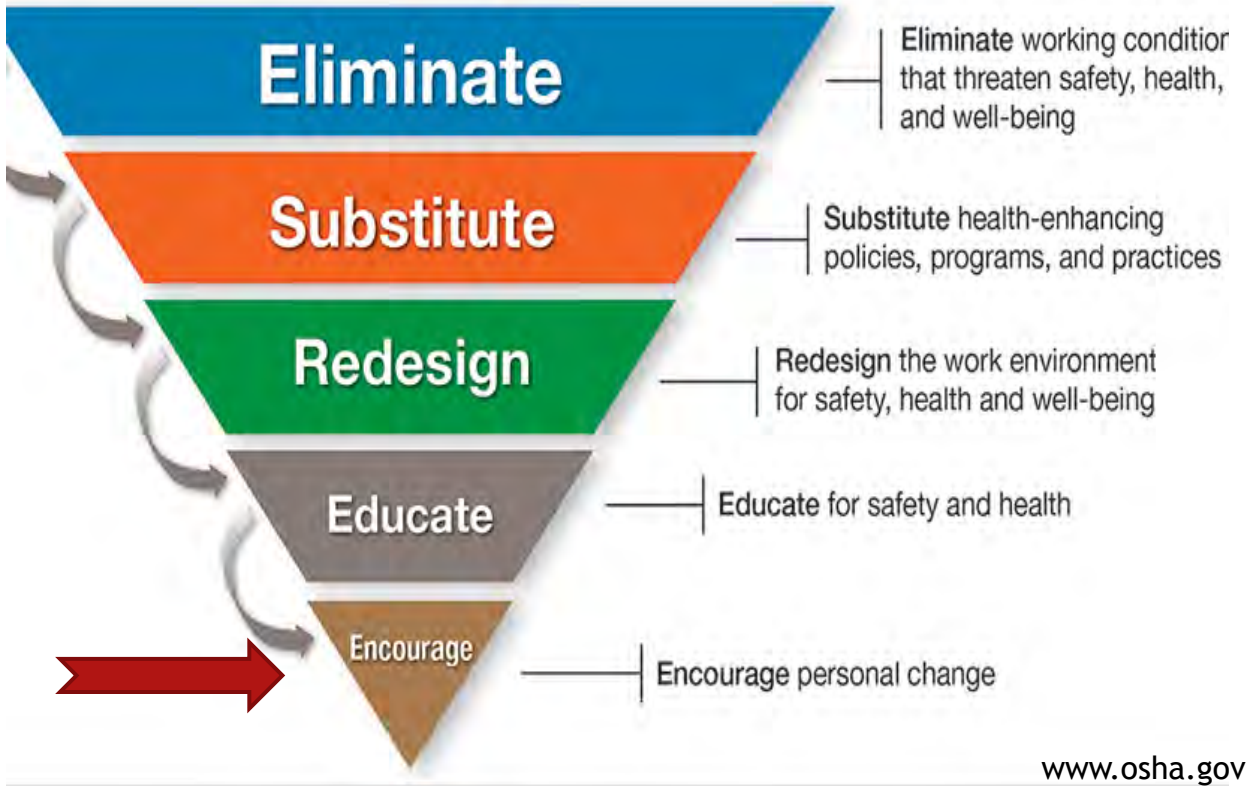

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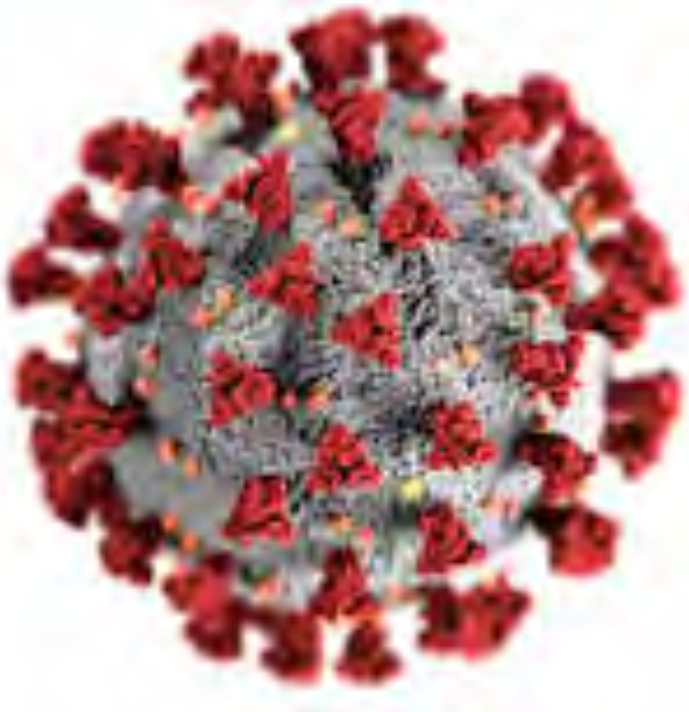

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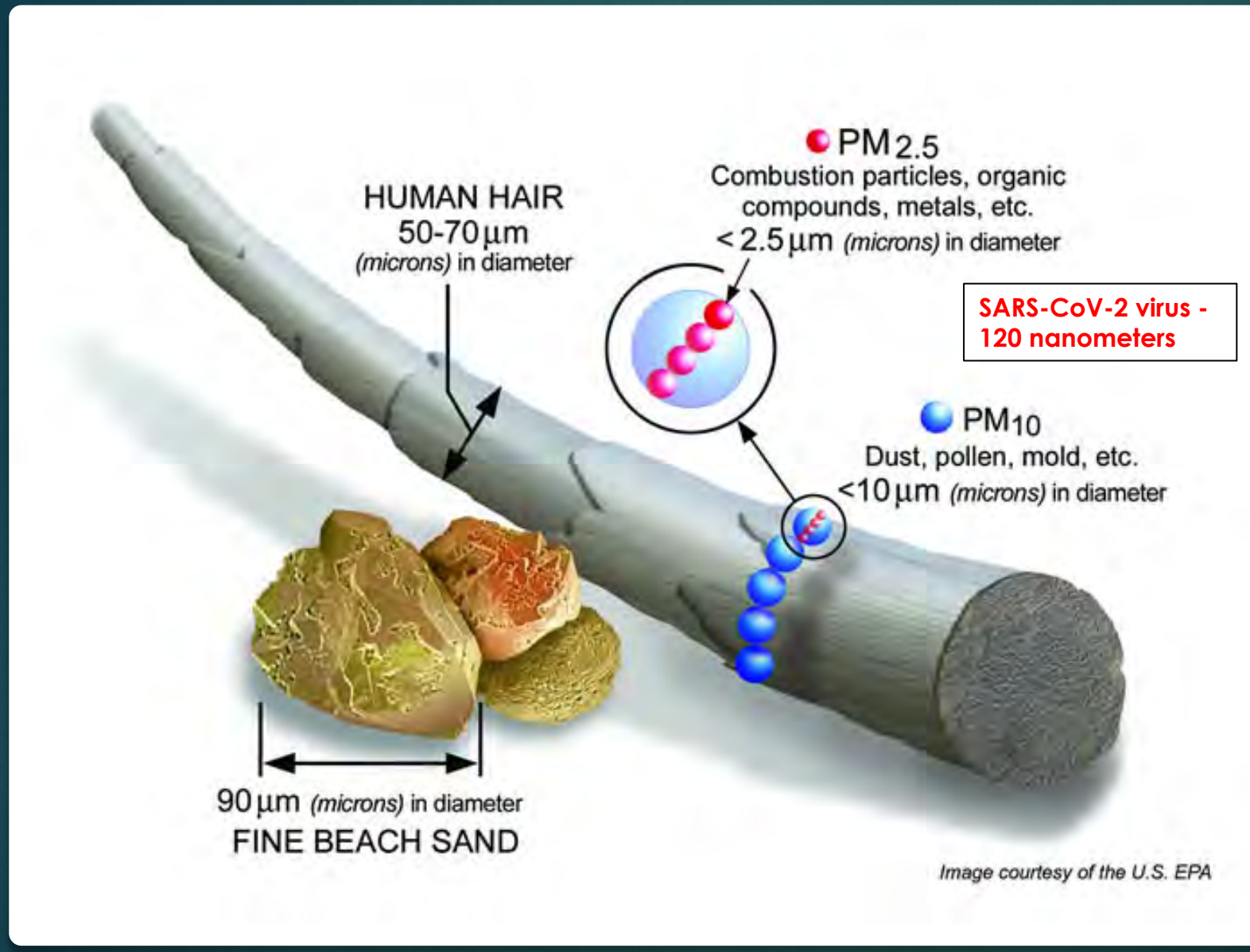

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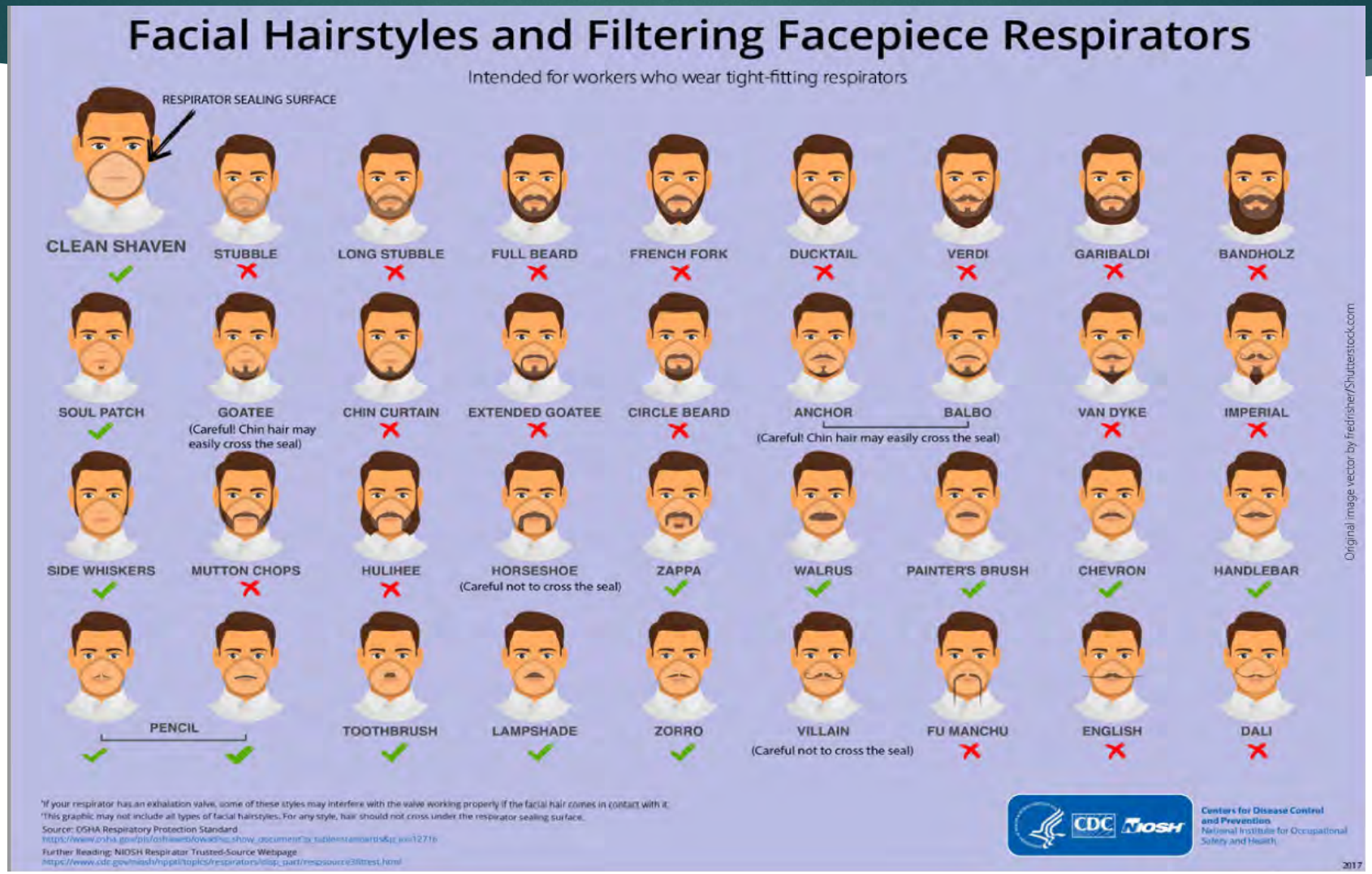

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- There is a lead educator in each state, focused on Pesticide Safety Education Programs (PSEP). https://npsec.us/psep-contacts

What about availability?
- *during a pandemic!*

OSHA Interim Enforcement Response Plan
https://www.oshalawblog.com/2020/04/articles/osha-interim-enforcement-response-plan-for-covid-19-matters/

EPA Temporary Guidance on Respiratory Protection in Agriculture
https://www.epa.gov/pesticides/epa-releases-temporary-guidance-respiratory-protection-agricultural-pesticide-handlers

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