

Debunking the Myths of N95 Respirator Use

Happy N95 Day!

September 5, 2013
11:00pm to 12:00pm EST

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Learning Objectives:

- To expose the fallacies behind the myths of N95 respirator use by presenting the science behind the facts.
- To encourage learning environments where myths no longer have a place in the culture of the workplace, and the facts about N95 use are clearly presented to workers.



NIOSH NPPTL and PPT Program Mission

An estimated 20 million workers use personal protective equipment on a regular basis to protect themselves from job hazards.



The **MISSION** of NPPTL and the PPT program is to prevent work-related injury, illness and death by advancing the state of knowledge and application of personal protective technologies (PPT).

**2009 H1N1 influenza spread to 191 countries
and resulted in 5700 fatalities in six
months...**

**The next outbreak of influenza pandemic is
predicted to be more severe**

MYTH 1:

We just experienced a pandemic a few years ago, so we don't have to worry about another one for another ten years or so, right?



Fact:

- **We can't predict when the next outbreak of influenza will be.**
- **Despite the warning signs, a sense of urgency to increase preparedness is not universal.**
- **General public indifference exists about potential flu pandemic.**

Myth 2:

- Respiratory protection is a minor concern when preparing for pandemic due to vaccines and other measures currently in place.



Facts:

- **World's capacity to produce vaccines is shrinking.**
- **The potential speed of transmissibility is a concern.**



Myth 3:



Because of stockpiles of N95 respirators, we are prepared for pandemic influenza for an indefinite amount of time.

Facts:

- It is likely that the amount of stockpiled N95s would not be enough during a pandemic.
- The stored N95s may not properly fit those who need to wear these respirators.
- Many filtering facepieces have an expiration date on the packaging. This date may expire well before the next pandemic.

Myth 4:

- **Respirators and Surgical Masks provide the same type and level of protection for the wearer.**
- Sub-myth:
Everybody already knows that there's a difference!



Fact:

- **Surgical masks are not designed to form a “leak-proof” seal to the face.**
- **Surgical masks are not designed to filter or block very small particles that may be transmitted by coughs, sneezes, or certain medical procedures.**
- **Due to the factors above, users may be unprotected to potential airborne exposure risks.**
- **However: Surgical masks may help to reduce transmission of saliva and respiratory secretions between healthcare workers and patient.**

Myth 5:

- **Smaller particles aren't captured by respirator filters.**

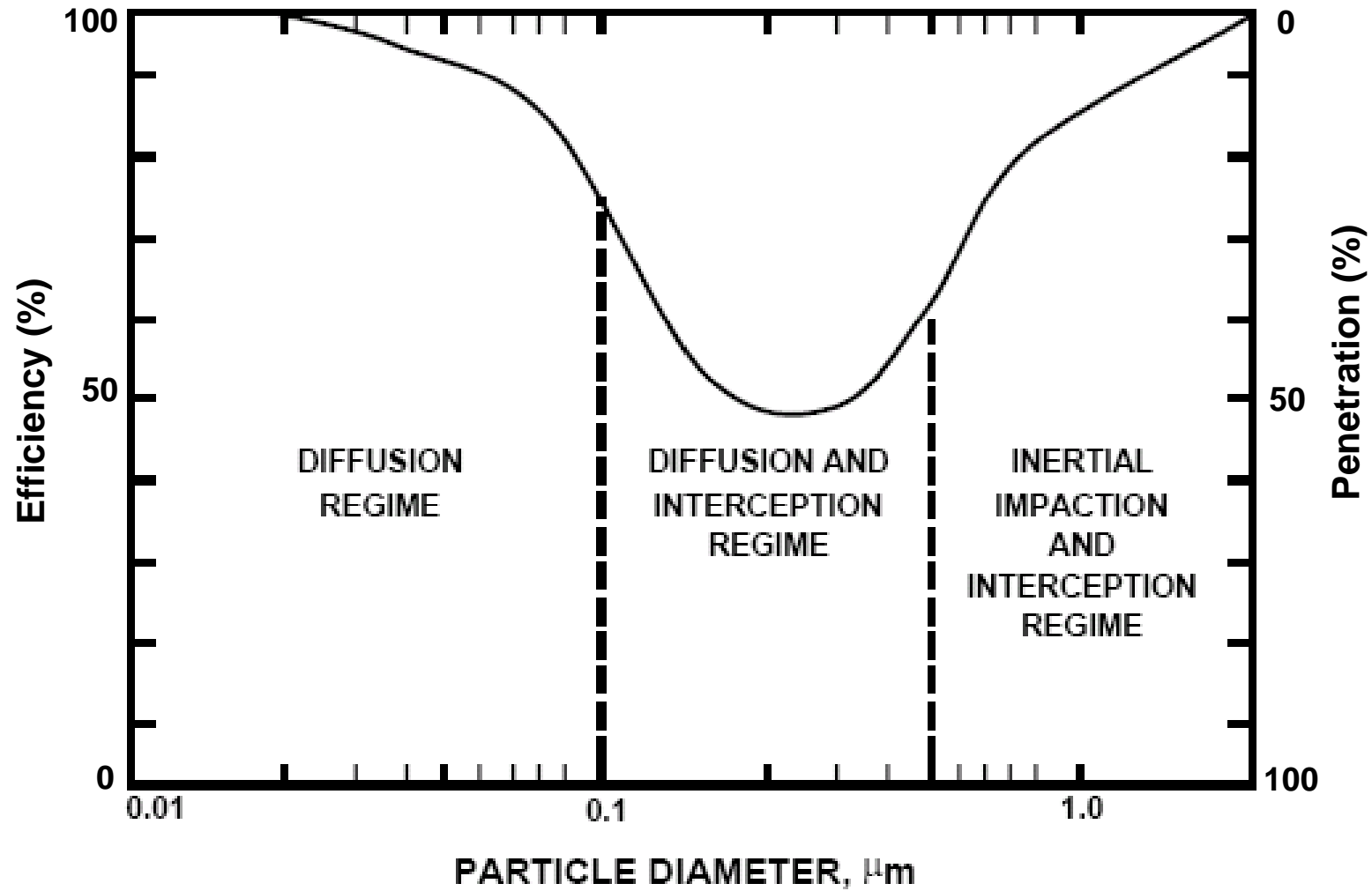
True

False

Fact:

- **Diffusion**: The movement of particles from a region of higher concentration to one of lower concentration by random molecular motion.
 - Because of diffusion, the lighter particles are randomly flying around and therefore their chance of getting captured by the media increases.
- **Impaction**: Process in or by which particles are stripped from an air stream by forcing the gasses to make a sharp bend.

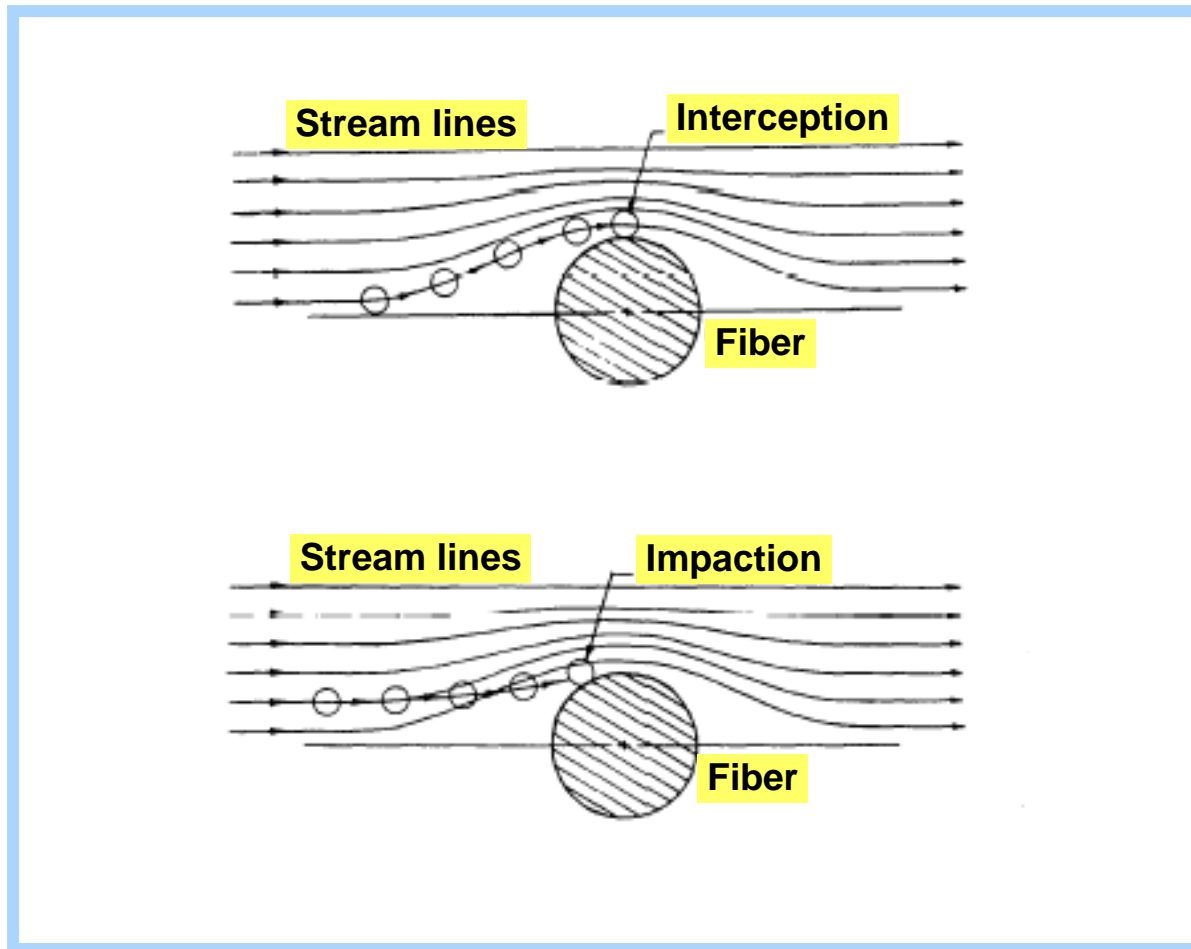
Filtration Theory



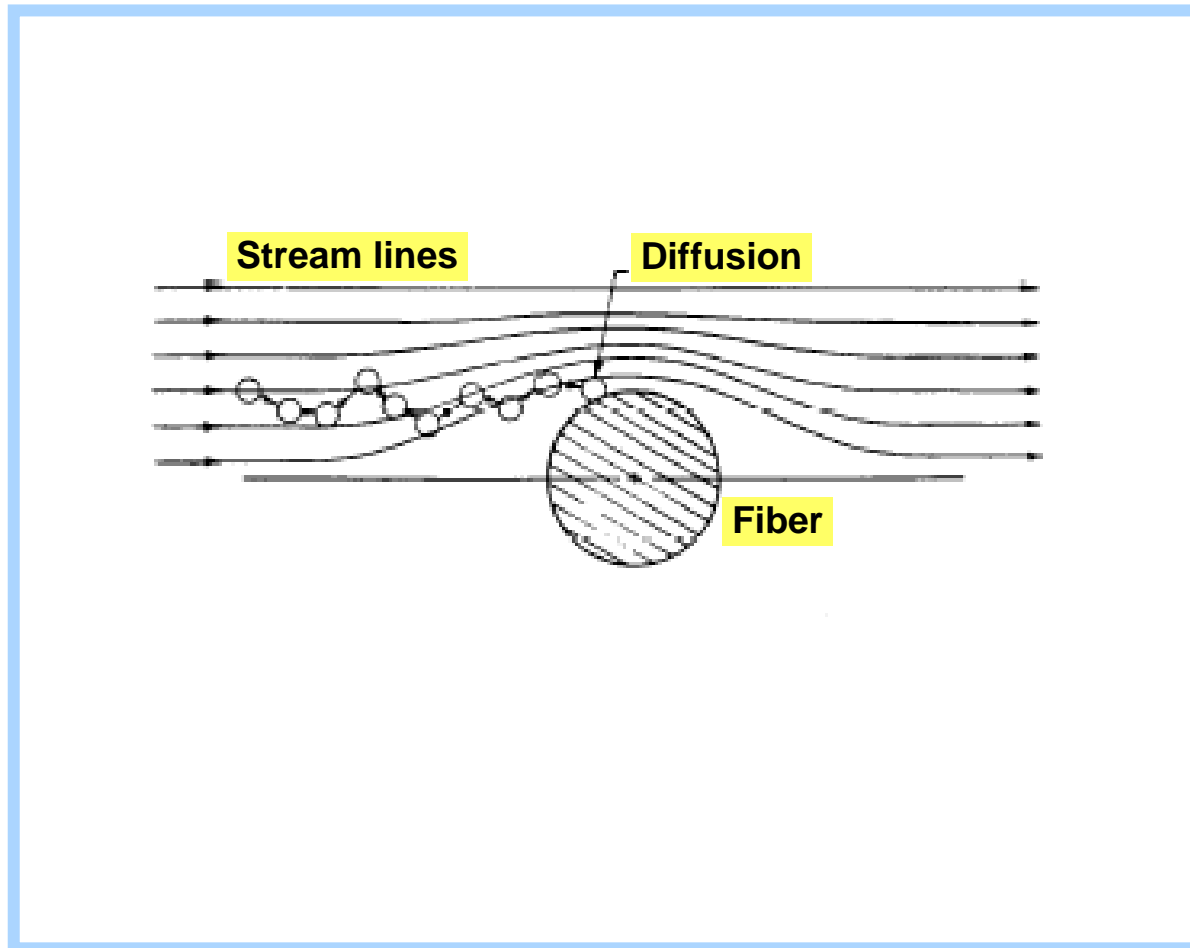
Filtration of Particles

- **Particles are filtered based on aerodynamic size.**
- **Similar filtration characteristics for similarly sized particles**
 - Inert particles
 - Biological particles
- **A particle is a particle.**

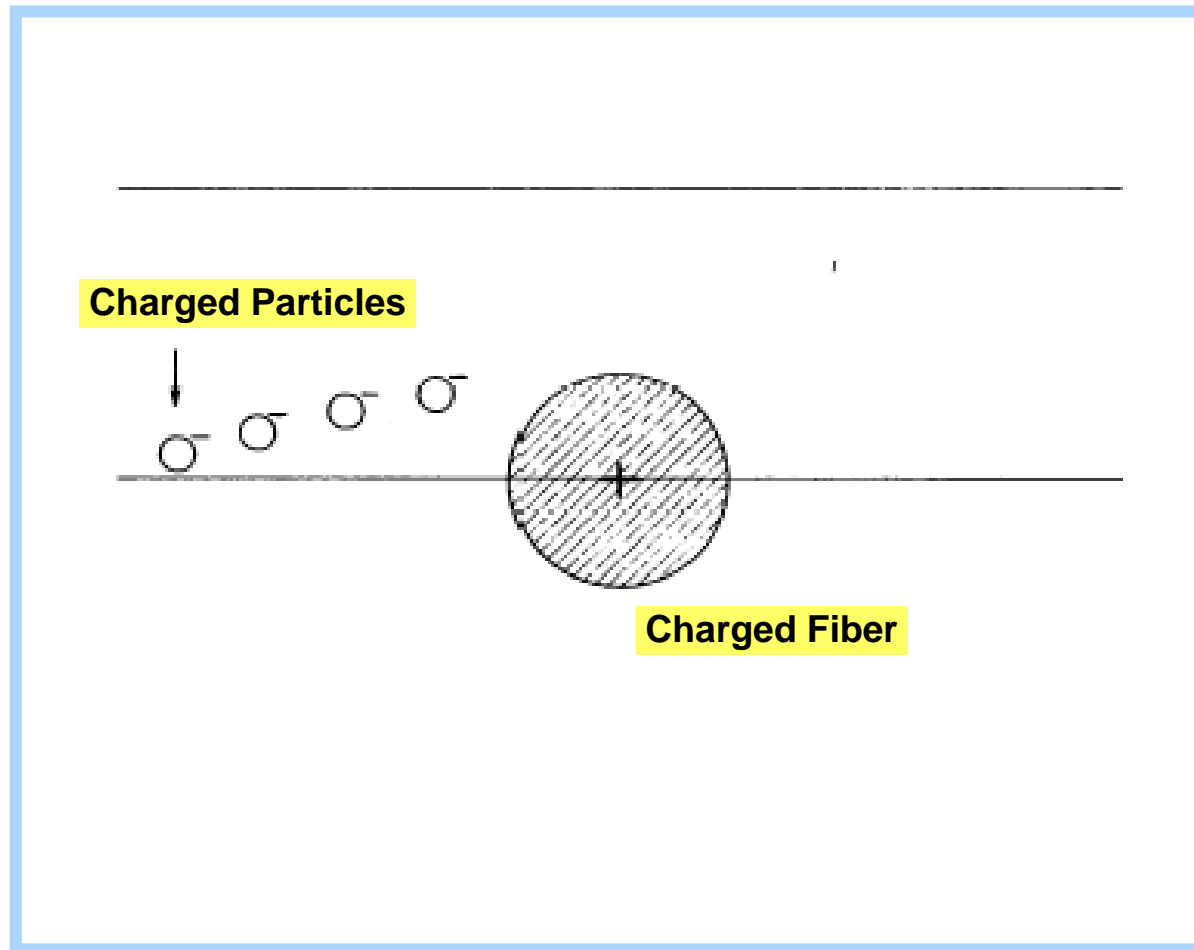
Interception and Impaction



Diffusion



Electrostatic (Common in N series Filters)



Myth 6:

- **Just because a mask does not say “NIOSH” on it, doesn’t mean it’s not protecting me. It’s just so convenient to get a cheap mask from the dollar store!**



NIOSH conducted research to address the knowledge gaps

Filter Efficiency Performance Results

Respirator/Mask Type	Polydisperse Aerosol Test (PAT) (%)	Monodisperse Aerosol Test (MAT) (%)	
		(40 nm)	(300 nm)
NIOSH N95	98.76 – 99.39	94.80 – 98.00	98.44 - 99.80
NIOSH P100	99.978 - 99.997	99.991-99.993	99.999 - 99.9994
FDA Surgical Mask	11.94 – 98.42	27.49 – 91.02	11.05 - 97.86
Unregulated Dust Mask	12.98 - 99.00	18.37 - 95.69	4.95 - 99.14

Sample sizes: N95=5; P100=2, Surgical mask=5, Dust mask=5

Myth 7:



- All N95 respirators fit and protect the same – so I should just find the one that is the most comfortable and go with it.

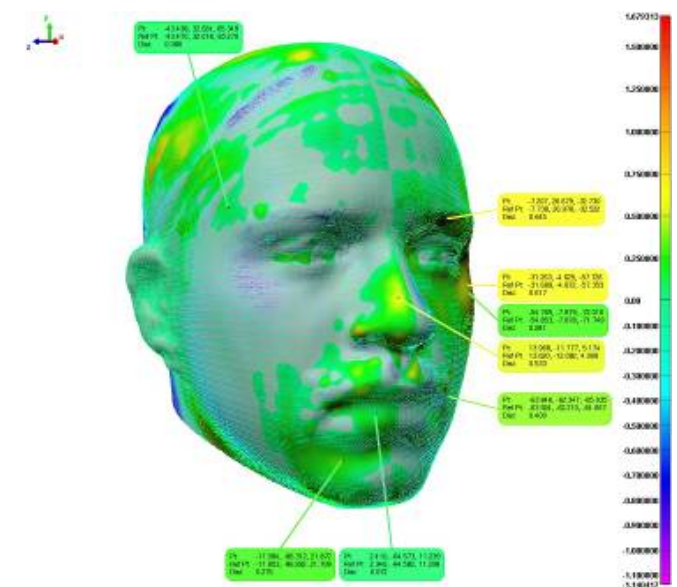
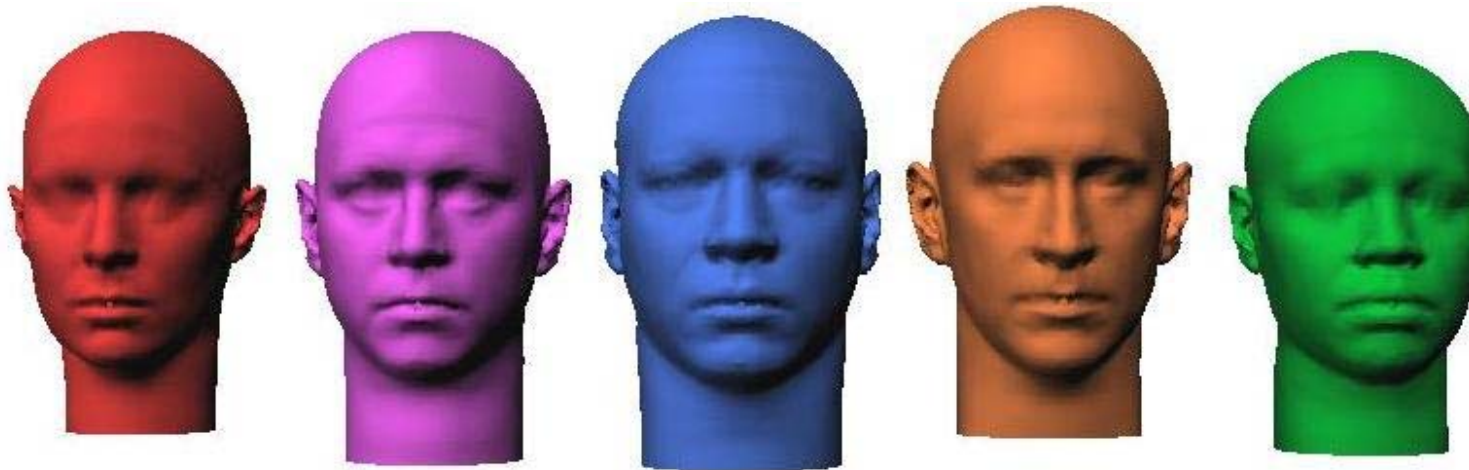
Fact:

It is important to understand how to select the appropriate respirator.

Selecting a respirator is like deciding which running shoe is best



Due to anthropometric differences, no one respirator can be guaranteed to fit all users



Myth 8:

- **My workplace only has to provide one type of N95 and I have to use model of respirator that my workplace provides, regardless of the fit.**



Fact:

OSHA regulations require an assortment of respirator models and sizes be available for selection at the time of fit testing.



More Facts:

- **If the selection of respirators provided by your employer do not properly fit your face, the employer must provide you with an alternate respirator in order to ensure that you have proper protection.**
- **Users should consult their respiratory program manager to find an acceptable solution.**



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Myth 9:

- **Once I am fit tested, I don't ever need to be fit tested again.**



Fact:

- **OSHA requires filtering facepiece respirator users to receive training and pass a fit test before using a respirator, and annually thereafter (29 Code of Federal Regulations Section 1910.134)**
- **The addition of glasses, facial hair, weight change, addition or loss of teeth will change the fit of the respirator along the user's face and therefore a new fit test is required.**

Myth 10:

- **If it says NIOSH-Approved on the box, I can trust this respirator. There's no other way to easily verify.**



The NIOSH Respirator Trusted-Source Information Page is a Web-based Clearinghouse of Respirator Information

Developed to dispel user confusion due to misinformation and lack of information on performance, selection, acquisition and use of various respirator types

The screenshot shows a web browser displaying the NIOSH NPPTL website. The page title is "Respirator Trusted-Source Information". The main content area includes a welcome message, a note about the page's development, and three sections: "Section 1: NIOSH-Approved Respirators", "Section 2: Use of NIOSH Respirators", and "Section 3: Ancillary Respirator Information". The left sidebar contains a navigation menu with items like "NPPTL", "Respirator Trusted-Source Information", and "NPPTL Homepage". The right sidebar includes "Contact Us" information and social media links.

Respirator Trusted-Source Information Page
(http://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/RespSource.html)

Some masks are advertised as NIOSH-approved when they aren't!

Jiangsu Teyin Nonwoven Fabrics Co., Ltd (JTN)



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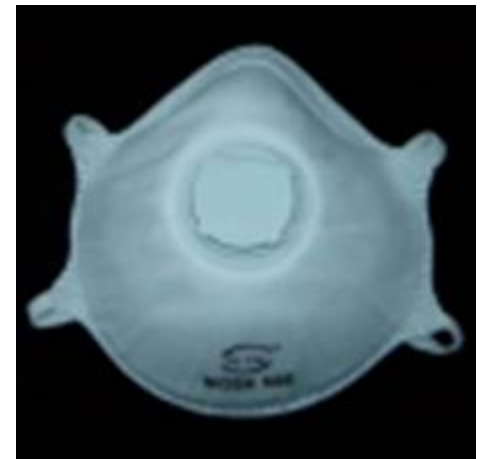
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Some previously approved products may appear to be NIOSH-approved – check the website

Jiangsu Teyin Nonwoven Fabrics Co., Ltd (JTN)

June 22, 2009

- 14 approvals revoked for failure to maintain an acceptable quality control plan.
- Can no longer be listed as NIOSH-approved.
- Can no longer be manufactured, assembled, sold or distributed as NIOSH-approved.



Sometimes others contact NIOSH to investigate an issue:

NIOSH contacted by the Singapore Government

- Did not claim to be NIOSH certified, but claimed to be N95.
- NIOSH tested and found > 80% leakage.
- Worst performance we had seen in our lab by a filter claiming to be “N95”.



NIOSH-approved respirators altered are no longer approved for occupational use



Sling Couture™ Fashion Face Mask (Patent Pending)

An FDA cleared and NIOSH approved N95 fashion facial mask for H1N1 offers the same protection as traditional masks against germs, bacteria and airborne pathogens that can cause the flu, and changes a normally unsightly medical mask into a beautiful fashion statement! Sling Couture™ allows users to be stylish *and* protected particularly when travelling. A simple elastic band holds the face mask firmly in place, and is adjustable over the nose and mouth.

Available: 11 luxurious fabrics. Size: one size fits most. For color options, visit SkyMall.com. Please specify men's or women's.

**A17413D \$9.95 each or
3 of same color for \$24.95**

ActiveForever
Approved Product!

The advertisement features a woman wearing a white Sling Couture mask, a collection of various patterned and colored masks, and a star logo for ActiveForever.

Sling Couture™ Fashion Mask – Observed in SkyMall magazine late Spring edition page 111.

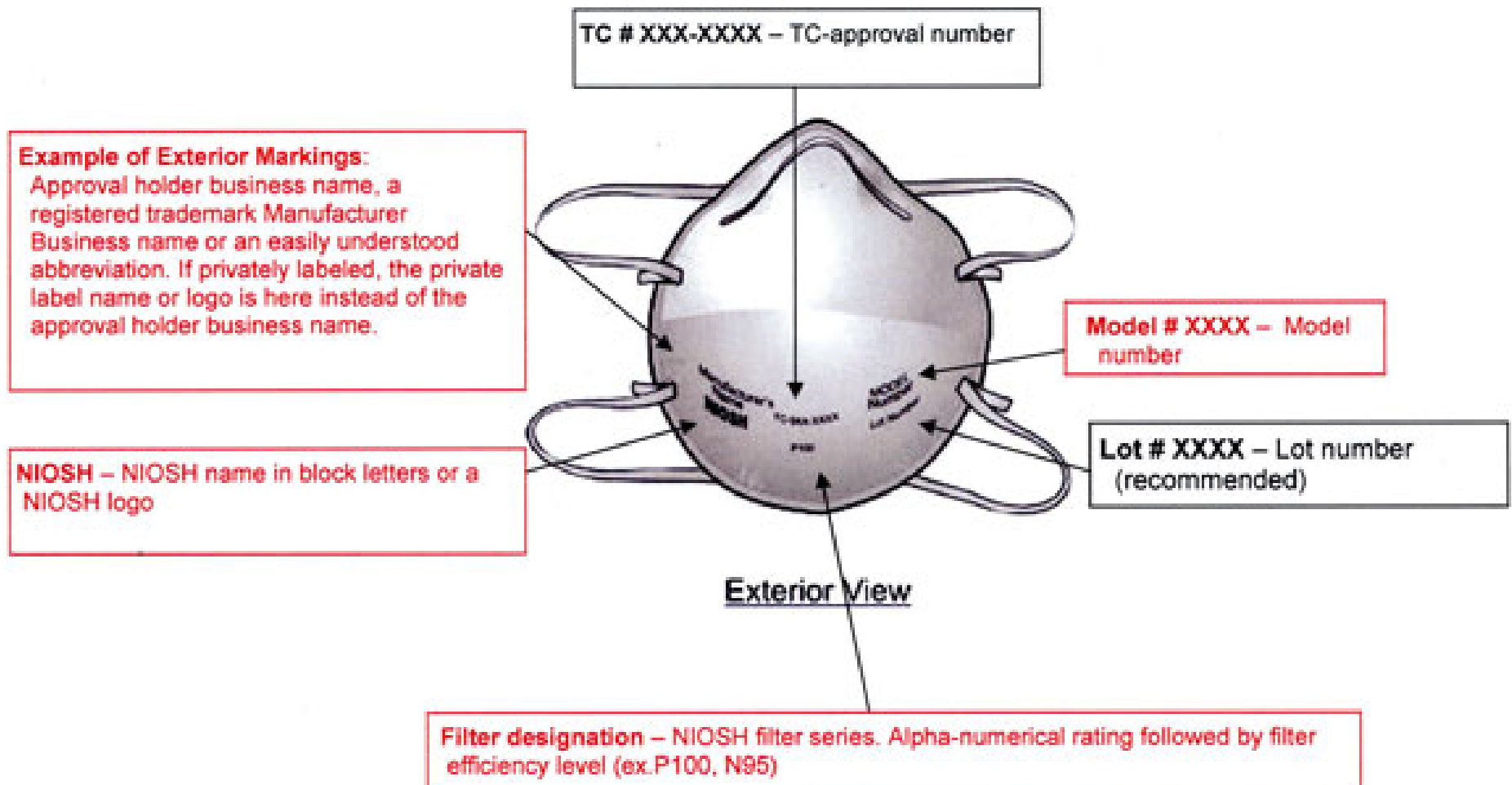


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Look for the NIOSH TC-Number and check the NIOSH Trusted-Source



Quality partnerships enhance worker safety and health.

www.cdc.gov/niosh/programs/ppt/



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