



Maritime Administration's Safety Corner



Winter 2023
Volume 8 Issue 4

The Maritime Administrator

Safety starts with taking care of your people, and winter weather is arriving. When possible, limit the exposure of workers to freezing conditions. Even when the temperature is above freezing, dangerous conditions can exist especially if one gets wet or after prolonged exposure.

This edition of the Safety Corner focuses on respirators, face masks and the dangerous task of confined space entry. Please share the respirator and face mask information with your shipmates and discuss what is expected in an emergency during confined space entry. The time to discuss emergency procedures is before they are needed.

Stay Safe!



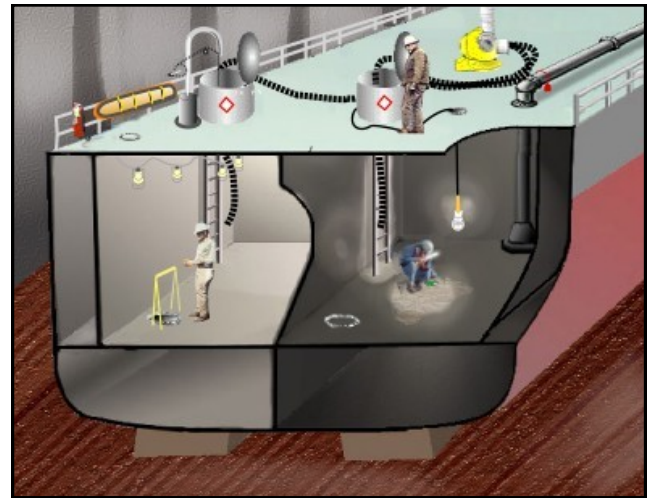
Rear Admiral Ann C. Phillips (USN Ret.)
Maritime Administrator

Confined Space Entry Attendant

Being the attendant when someone enters a confined space can be a boring job. This can involve hours of waiting for your coworkers, who entered the confined space, to finish a job. However, the actions an attendant takes in an emergency could be the difference between life and death. If you are entering a confined space, remember the stand-by person may be the one who saves your life if something goes wrong. Here are a couple of things to keep in mind prior to starting a confined space entry.

- Ensure the space has been ventilated for the required amount of time.
- Perform Lockout/ Tagout where needed.
- Have emergency entry equipment readily accessible.
- Properly test the air of the confined space prior to entry. Ensure testing equipment is properly calibrated.
- Maintain an accurate count of workers in the confined space.
- If the confined space workers are out of sight of the stand-by person, establish a frequency for checking on the workers.
- Ensure the stand-by person knows what to do in different scenarios (examples; no response to a check in; air testing equipment begins to alarm; there is an emergency somewhere else on the ship; ventilation to confined space stops).

For all the responsibilities of attendants for confined spaces, refer to 29 CFR Part 1926.1209 Duties of Attendants.



From OSHA.gov

INSIDE THIS ISSUE:

| | |
|-----------------------|---|
| Confined Space Entry | 1 |
| Respirator Cartridges | 2 |
| Facemasks | 3 |
| Future Meetings | 4 |

Respirator Terminology & Cartridge Color Codes

There are many different respirator cartridges available to address specific hazards. These cartridges come in a wide variety of colors and designations. The National Institute for Occupational Safety and Health (NIOSH), which approves cartridges and respirators, has developed a color-coding scheme which is universal across all industries and manufacturers. A portion of the color-coding scheme is shown in the table below. Notice that the bottom three entries in the table are combination filters (particulate filter plus a vapor/gas filter). Combination filters are used when two or more substances may be present (or if a contaminant is being sprayed). It is important to identify and quantify hazardous airborne contaminants in order to select the proper protective equipment.

The following are terms associated with airborne hazards which are important to understand when selecting a cartridge.

Dust - Solid mechanically produced particles (e.g., from crushing, drilling, grinding, sweeping, or handling of solid materials).

Fume - Solid particles generated by condensation from the gaseous state, generally after volatilization from melted substance (e.g., welding or smelting), which are generally less than 1 micrometer in diameter.

Mist – Small liquid droplets of a substance or mixture suspended in a gas (usually air). Examples of mists include paint spray, oil mist from grinding operations, and acid mists from electroplating and pipe pickling operations.

Vapor - The gaseous state of a substance that is solid or liquid at room temperature and pressure. Vapors are formed by evaporation. Solvents and other substances with high vapor pressures (highly volatile) easily evaporate and form vapors. Examples of substances which readily produce vapors at room temperature are acetone, benzene, and toluene.

Gas - A substance that is in the gaseous state at room temperature and pressure.

Particulate filters (such as P100 filters) can remove particulates such as dust and solid particles in fumes, but they cannot remove vapors and gases. Filters which absorb vapors and gases, have a limited service life as eventually the filter material, usually activated charcoal, will be come saturated. A service life may be calculated for each application based on the concentration of the hazard, intensity of the work, temperature, humidity, and type of cartridge. Some manufacturers offer cartridges with a visible service life indicator built-in to assist in determining whether a cartridge is serviceable.

Maritime Examples

In a shipyard with organic vapors (paint or solvents) and dust a combination black/magenta filter would be used. For welding a magenta P100 filter could be used to filter out metal fumes or a combination yellow/magenta filter may be necessary depending on the fluxes, electrode, and surface coatings involved in the welding process and byproduct gases produced.

*** Remember that a purifying respirator does not provide oxygen, it only filters items out of the existing atmosphere. A purifying respirator will not protect you, beyond its intended purpose, in atmospheres with less than 19.5% oxygen.**

| Used for: | Assigned Color |
|--|------------------------|
| Organic Vapors | BLACK |
| Ammonia | BRIGHT GREEN |
| Acid Gasses | WHITE |
| Organic Vapors (OV) and Acid Gasses | YELLOW |
| Organic Vapors (OV), Ammonia, Acid Gasses | OLIVE/BROWN |
| High Efficiency (HE) Filter, P100 Filters | MAGENTA |
| Organic Vapors AND High Efficiency (HE) Filter, P100 Filters | BLACK MAGENTA |
| Organic Vapors (OV), Acid Gasses AND High Efficiency (HE) Filter, P100 Filters | YELLOW MAGENTA |
| Organic Vapors (OV), Ammonia Acid Gasses AND High Efficiency (HE) Filter, P100 Filters | OLIVE/BROWN MAGENTA |

Partial listing of NIOSH cartridge color-coding
Source: <https://www.cdpr.ca.gov>

Understanding Particulate Filter Designations

After COVID-19, we probably all heard of the designation “N95”, but have you ever wondered what the designator N95 stands for?

National Institute for Occupational Safety and Health (NIOSH) approved particulate filters are classified according to the series (denoted by a letter) and efficiency (denoted by a number). There are three series (N, R, and P) and three efficiency levels (95, 99, and 100). The series designator relates to the filter’s ability to function when exposed to oil, as oil may reduce the effectiveness of the filter.

Series

N – for *Not* resistant to oil, for use with solid or liquid airborne particulates that do NOT contain oil.

R – for *Resistant* to oil, limited to 8 hours of use

P – for oil **P**roof, consult manufacturer’s guidance on recommended service time limits

The R- and P- series filters can be used in non-oil aerosol environments like an N- series filter, but they are also capable of removing oil-based liquid particulates. The difference between an R- and P- series filter is how long the filter lasts in an atmosphere which contains oil. R-series filters are limited to 8 hours of use and P-series last longer. Consult the filter manufacturer for guidance on time-use limitations for P-series filters.

The efficiency denotes the effectiveness in removing 0.3 micron sized particles. The 0.3 micron size is significant because particles of this size (between 0.1 and 0.3 microns) tend to be the most difficult to filter with a fiber filter. This particle size is known as the most penetrating particle size (MPPS). You can think of the MPPS as the worst-case scenario for the filter. Particles larger than the MPPS are stopped by impacting the filter media. Particles smaller than the MPPS move in a zig-zag motion and tend to be stopped by diffusion into the filter media. A filter with 95% efficiency removing 0.3 micron sized particles tends to have an even greater efficiency removing particles larger and smaller than 0.3 microns.

Efficiency

95 – demonstrates a minimum efficiency of 95%

99 – demonstrates a minimum efficiency of 99%

100 – demonstrates a minimum efficiency of 99.97%

Now that you understand the series and efficiency designations you know that an N95 respirator then has the following characteristics:

N – Not resistant to oil **95** – minimum efficiency of 95%

So what about KN-95? The “KN” denotes that the filter is designed to a Chinese standard (Standardization Administration of China standard GB 2626) with similar characteristics to a NIOSH N-95 filter. However, KN filters are not NIOSH approved.



From: HHS.gov



MARAD

1200 New Jersey Ave, SE
Washington, DC 20590

Safety Always!

United States Maritime
Administrator
RDML Ann C. Phillips USN,
(Ret)

Associate Administrator for
Environment and Compliance
Kristine Gilson (Acting)

Office of Safety
Kevin Kohlmann, Director
Todd Ripley
John Goering
Will Nabach

Office of Maritime Security
Cameron Naron, Director

Office of Environment and
Innovation
Dan Yuska, Director

Office of Environmental
Compliance
Kristine Gilson, Director

Email:
MARAD.SAFETY@DOT.GOV

Maritime Safety Meetings

- January 07-11, 2024: **Transportation Research Board Annual Meeting** in Washington D.C. ([Homepage](#) | [Annual Meeting \(trb.org\)](#))
- January 27-30, 2024: **Passenger Vessel Association (PVA) Annual Convention** in Portland, OR ([Meetings and Events Calendar](#) | [Passenger Vessel Association](#))
- March 18-22, 2024: **IMO Marine Environmental Protection Committee** in London, U.K. ([PROG-132-Preliminary-Rev.1 - Preliminary Programme Of Meetings For 2024 \(Secretariat\) final.pdf \(imo.org\)](#))
- March 20-21, 2024: **National Harbor Safety Committee Conference** in Chicago, IL ([National Harbor Safety Committee Conference 2024 \(chicagoharborsafety.org\)](#))
- April 18-19, 2024: **Waterborne Transport Group** meeting in Chicago, IL ([Waterborne Transports Group - National Safety Council \(nsc.org\)](#))
- May 13-24, 2024: **IMO Maritime Safety Committee** in London U.K. ([PROG-132-Preliminary-Rev.1 - Preliminary Programme Of Meetings For 2024 \(Secretariat\) final.pdf \(imo.org\)](#))
- November, 2024: **International Workboat Show** in New Orleans, LA ([International WorkBoat Show | Conference and Expo for Commercial Vessels](#))
- June 12, 2024: **ASTM F25 Committee on Ships and Marine Technology** in Philadelphia, PA ([ASTM International](#))

Safety Tip:

Seasickness is a result of a conflict in the inner ear, where the human balance mechanism resides, and is caused by a vessel's erratic motion on the water. Inside the cabin of a rocking boat, for example, the inner ear detects changes in both up-and-down and side-to-side acceleration as one's body bobs along with the boat. But, since the cabin moves with the passenger, one's eyes register a relatively stable scene. Agitated by this perceptual incongruity, the brain responds with a cascade of stress-related hormones that can ultimately lead to nausea, vomiting, and vertigo.

Tips to help ease the symptoms of seasickness: 1) maintain your fluid intake (avoid milk and coffee) 2) keep moving—staying busy keeps your mind off the discomfort 3) Stay on deck if possible—fresh air helps 4) consider an over-the-counter medication.

From: NOAA.gov

Disclaimer: Any references to non-Federal entities herein are for illustrative and educational purposes only and should not be construed as an endorsement of, or preference for, any product, service, or enterprise by the Maritime Administration, U.S. Department of Transportation, or U.S. Government.