

BEWARE: Your Air Supply Box May Put You at Risk with OSHA

OSHA and Respiratory Protection

Respiratory Protection (1910.134) is a perennial Top-5 offender¹ in the Top-10 most frequently cited OSHA (Occupational Health and Safety Administration) Standards.

On June 25, 2013, OSHA announced a new National Emphasis Program for occupational exposure to isocyanates. This means that there will be increased scrutiny (inspections), along with stiffer citations, fines, and even shutdowns.

When OSHA performs an audit for a worksite that uses respiratory protection, they will look for several things, but there is a high probability that two of the first things that will be examined will be: 1) Is there a written respiratory protection program with all of the necessary elements? 2) Is the respiratory protection appropriate and **NIOSH approved**?

NIOSH and Respiratory Protection

NIOSH (National Institute for Occupational Safety and Health) is the agency responsible for approving respirators in accordance with the federal regulation 42 CFR Part 84. **The approval is based upon the entire system** having been submitted for review and testing.

"...The regulation permits NIOSH to **only approve complete respirator assemblies** and prohibits the approval of respirator subassemblies such as SCBA air cylinders or supplied air respirator (SAR) air supply hoses. These requirements are intended to insure that one respirator manufacturer has overall control and responsibility for the integrity of the approved respirator. The respirator manufacturer has the responsibility to ensure that its replacement parts are "designed and constructed to ...maintain the effectiveness of the respirator."²

In accordance with the federal regulation, 42 Part 84.131³:

Supplied air respirators; required components.

(a) Each supplied air respirator described in §84.130 shall, where its design requires, contain the following component parts:

- (1) Facepiece, hood, or helmet;
- (2) Air supply valve, orifice, or demand or pressure-demand regulator;
- (3) Hand-operated or motor-driven air blower;
- (4) Air supply hose;**
- (5) Detachable couplings;
- (6) Flexible breathing tube; and
- (7) Respirator harness.

An example of a risky air supply box

The Tennessee Chill Box™ (TCB) is an air conditioned respirator supply system that will not work with the 3/8" and 1/2" hoses and fittings with which the majority of SARs have been approved by NIOSH. TCB encourages you to substitute the air supply hose that has been approved by NIOSH in favor of a larger diameter hose.

On 10/27/11, at 8:01PM, Mike Asbra, President of Tennessee Chill Box, posted the following on a Q&A forum at www.sprayfoam.com regarding an entry wondering on how many feet of hose the Chill Box can run:

"...If you use the required hose kit and fittings, bank on a 15 to 25 degree cooler temp than ambient air... It is best to stay with what you have if you desire small ID air lines and fittings. The Chill Box will not work with 3/8, 1/2" ID hose or fittings."⁴

Why does this matter?

Since SARs are approved as complete assemblies, including the air supply hose, substituting for the TCB required hose and fittings automatically voids NIOSH approval on the system. When an OSHA inspector examines the respirator he/she will look at each component to verify that it is part of the system that NIOSH tested and approved. If the air supply hose is not the same brand as the rest of the system and/or cannot be found on the NIOSH approval label for the respirator system, then the entire system is non-compliant. So, by simply implementing the TCB into your SAR system, you can easily join the group of OSHA's Top 5 most cited.

Why does TCB require the use of their hose?

The Tennessee Chill Box is a blower-driven air conditioner. In order to achieve the advertised air flow, measured in cubic feet per minute (CFM), the TCB must use a larger vacuum-style hose in order to move enough air. The reason is that the TCB is unable to produce enough operating pressure, measured in pounds per square inch (PSI), in order to achieve the required CFM through standard 3/8" or 1/2" inner diameter (ID) hose lines.

Across the industry, the standard operating procedure for setting up a SAR system is to set the pressure at the Point of Attachment to the Air Source, in order to achieve the desired flow, which is how NIOSH tests and approves systems.

Why does pressure matter, if I am getting more air flow?

TCB claims of flow are only accurate with the larger required air supply hose, which has already been established to be void of NIOSH approval and out of compliance with OSHA. With the proper air supply hose, the flows are actually less than TCB claims and, more importantly, less than those required for approval by NIOSH. Minimum flows of 6 CFM for hood/helmet style respirators and 4 CFM for mask style respirators have been established by NIOSH to help ensure minimum protection levels. In addition, if the respirator truly did receive 10X the OSHA minimum (e.g. 60 CFM for hoods) this would exceed the 15 CFM maximum allowed by NIOSH.

How do I know if I am using a NIOSH approved assembly?

NIOSH certificates of approval are issued for respiratory protective devices that meet the applicable requirements, under 42 CFR part 84.30. Each certificate includes labels to be provided by the applicant with each approved respirator assembly⁵. These are typically referred to as "TC numbers", as all NIOSH approval numbers begin with the letters "TC" (for "Testing and Certification"). The certificate of approval number consists of three parts:

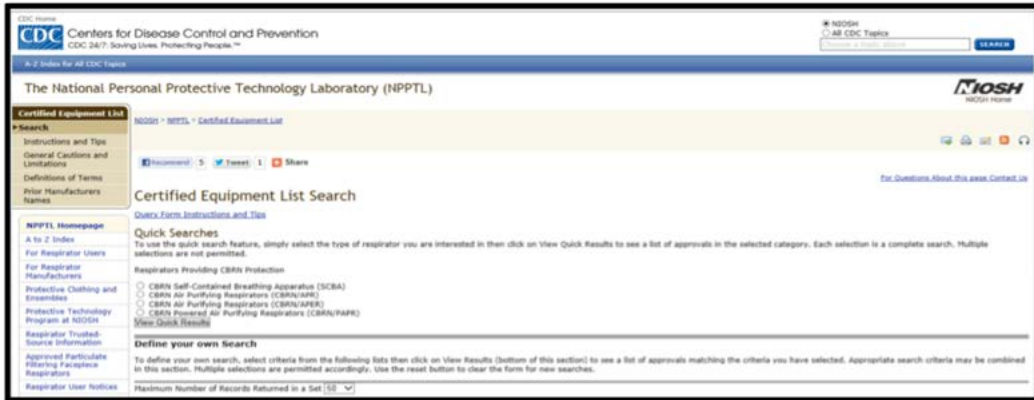
1. TC
2. Approval Schedule (set of standards applicable to a specific respirator type)
3. Unique NIOSH assigned number

An example TC number for a Face Mask Respirator could be TC-23C-1369

RESPIRATORY RESOURCE



The Centers for Disease Control and Prevention (CDC) maintains a searchable Certified Equipment List (CEL)⁶, where users can search for any system component with NIOSH approval. One can search by manufacturer (Tennessee Chill Box is not listed) or by respirator type.



“Use of components not listed on the full NIOSH approval label constitutes configurations not included in the NIOSH approval and can cause serious injury and/or death to the wearer.”⁷

THIS CARTRIDGE IS APPROVED ONLY IN THE FOLLOWING CONFIGURATIONS:

RESPIRATOR COMPONENTS													Alternate Regulator	Cautions & Limitations			
TC-	Protection	Cartridge	Alternate Face Piece				Alternate Filter				Alternate Hoses/Lengths						
			1	2	3	4	5	H	W	G	G	C	9	9	3	3	3
			0	0	0	0	0	A	I	A	L	R	4	4	0	0	0
			0	0	0	0	0	L	N	T	O	O	3	3	2	2	2
			0	0	0	0	0	O	D	E	R	V	-	-	1	1	0
													5	0	0	0	0
23C-2659	OV	X	X														ABCHJLMNO
84A-7001	OV/N95	X	X					X									ABCHJMNOP
84A-7005	OV/N100	X	X	X				X									ABCHJLMNOP
84A-7326	OV/R99/SA/CF	X		X	X	X			X			X	X		X	X	ABCDEGHJLMNOPS
84A-7532	OV/P95/SA/DE	X		X	X	X				X			X			X	ABCDEGHJLMNOPS
84A-7745	OV/P100	X		X	X	X					X						ABCHJLMNOP

From the NIOSH Fact Sheet⁷, above is an example of an approval label showing the two NIOSH approved respirators and approved hose combinations from this manufacturer (“x” designates an approved assembly). For more information about NIOSH approval labels, please visit <http://www.cdc.gov/niosh/docs/2011-179/pdfs/2011-179.pdf> to see the whole fact sheet.

What should I ask a respirator vendor?

Now that you are informed about NIOSH approved assemblies, here are some easy questions to ask your vendor regarding their respirators:

1. Is this respirator NIOSH approved (yes or no)?
2. Can you show me the TC number?
3. Is the hose part of the original manufacturer’s NIOSH approved system, or has it been substituted?
4. Where can I verify the proper operating pressure?

The Bottom Line

If your air supply box doesn’t allow you to connect your respirator as a complete system, including air supply hose, exactly as NIOSH has approved, then you should chose a different air supply box because you will not be OSHA-compliant.

¹ https://www.osha.gov/Top_Ten_Standards.html

² 42 CFR 84.62(b)

³ <http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=c9c15fd462fe5c4f4e85b73f161b2e0&r=PART&n=42y1.0.1.7.67#42:1.0.1.7.67.10>

⁴ <http://www.sprayfoam.com/mnps/fullthread.cfm?threadid=14614&mnforumid=2&mnboardid=1>

⁵ 42 CFR Part 84.31[d]

⁶ http://www2a.cdc.gov/drds/cel_form_code.asp

⁷ <http://www.cdc.gov/niosh/docs/2011-179/pdfs/2011-179.pdf>

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