

Respirator Use among ARTBA Member Companies

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Introduction

A joint National Institute for Occupational Safety and Health (NIOSH) and Bureau of Labor Statistics (BLS) report¹ raises sobering questions regarding respirator usage practices within U.S. industry as compared to Occupational Safety and Health (OSHA) regulations² and NIOSH recommendations.³

This report focuses on information from the survey for companies in *Heavy Construction, Except Buildings*,⁴ which includes many American Road and Transportation Builders Association (ARTBA) members. The report describes findings from focus groups (arranged by ARTBA and conducted by NIOSH) about respiratory protection, such as respirator usage practices in companies such as yours, and how the practices compare to OSHA regulations and NIOSH recommendations, and where your company stands, as compared to other similar companies, on respiratory protection.

Survey of Respirator Use and Practices: Construction Industry

Background

In 2001, NIOSH and the BLS conducted a survey titled *Survey of Respirator Use and Practices*. The mailed questionnaire survey collected data on subjects such as the types of respiratory protection used, the types of respirator fit tests used, and the substances that prompted the decision that respiratory protection was needed.

Findings

Heavy Construction has a higher overall percentage of required respirator use than general construction establishments as a whole (12.4% compared to 9.6%), but employees in *Heavy Construction* group are less likely to use respirators than general construction employees as a whole (6.6% compared to 8.9%). Figure 1 shows that “Other dusts”, “Paint vapors”, “Solvents”, and “Silica dust” were substances for which respirators were most frequently used in the construction industry.

Potential Respirator Program Inadequacies

Figure 2 shows that 52% of respirator-using *Heavy Construction* establishments had at least three indicators of a potentially inadequate respirator program, as measured against program features that are either required by OSHA or recommended by NIOSH.

NIOSH-ARTBA Focus Groups

NIOSH also conducted a series of ARTBA arranged focus groups to obtain information directly from (a) union employees, and (b) management representatives. ARTBA recruited company safety personnel, management staff, or union workers from ARTBA (contractor) members to participate in seven focus group meetings conducted between May, 2001 and September, 2003. The focus groups (each with six to eight participants) were held in conjunction with other ARTBA meeting attended by the company representatives.

Focus Group Findings

- The size of the companies ranged from 20 to 2000 employees, with a median size of 200 employees
- Some of the companies worked in all fifty states
- Respirators were used extensively during bridge rehabilitation, road bed preparation, paving, culvert excavation/placement, asphalt plant, milling, quarrying, and abrasive blasting operations at roadway construction sites and related transportation projects
- Almost all of the participants reported that their company assigned a person to oversee respirator use and conduct fit testing for tight-fitting respirator wearers

Exposure to Substances (alphabetical order)

- Asbestos
- Asphalt fumes
- Asphalt additives including fly ash
- Carbon monoxide
- Concrete dust and silica
- Diesel and gasoline
- Hydrogen sulfide
- Lead (from paint on bridges)
- Paint vapors
- Welding fumes

Participants reported that respiratory protection was one means of control for the substances encountered at the worksite. Other exposure control methods were:

- Water spray
- Fans or natural air movement
- Local ventilation with drills and on paving machines
- Enclosed cabs
- Abrasive blasting substitutes

Barriers to Effective Respirator Use

The focus group discussions identified barriers (in the opinion of the participants) to effective respirator use. The barriers have been classified by the authors into four groups: 1) respirator use and design, 2) industry/worksite, 3) management, and 4) worker factors. Some barriers could fall into more than one group.

Respirator Use and Design Factors:

- High ambient temperatures – sweating, heat stress with other PPE (e.g., face shields, goggles, reflective vests)
- Lack of comfort
- Fogging of respirator facepiece and safety glasses
- Difficulty wearing safety glasses with respirators
- Visual obstruction from respirator (hoods)
- Communication difficult

Industry/Worksite Factors:

- High worker turnover
- Short duration of jobs adversely impacts:
 - Workers' training
 - Fit testing
 - Air monitoring
 - Medical evaluation
- Proper storage and cleaning facilities sometimes not available (makes it difficult to maintain respirators)

Management Factors:

- Lack of management and supervisor commitment in some companies
- High costs of respirator programs (training and medical evaluation)
- Reluctance to train workers
- Difficulties in enforcing proper respirator use

Worker Factors:

- Non-English speakers
- Unawareness of respirator importance
- Lack of worker commitment
- Low educational level of some workers
- Presence of facial hair
- Smoking habits

Comparing ARTBA Focus Group and National Survey Findings

The NIOSH/ARTBA focus groups were undertaken independently of the nationwide *Survey of Respirator Use and Practices*, and their findings were not intended for comparison. Still, when examining the findings of the two studies, there are interesting consistencies.

Of the top ten substances that prompt respirator use for the construction industry, as estimated by the nationwide survey, seven were also reported by the ARTBA focus group participants. Furthermore, the focus group participants reported a number of barriers to effective respirator use that are consistent with the high percentages of establishments with indicators of potentially inadequate respiratory protection programs from the survey (see Figure 2).

Your Company and OSHA's Respirator Program Requirements

- Do you have a trained respirator program administrator?
- Do you have a written respirator program adopted by management to determine how respirators are used?
- Do you have written procedures for maintaining respirators?
- Do you fit test wearers of tight-fitting respirators?
- Do you assess employees' medical fitness to wear respirators?
- Do you provide training regarding the need, use, limitations, and capabilities of respirators?
- Do you have written procedures to periodically evaluate the effectiveness of respirators used at your establishment?

- Are your airline respirator couplings incompatible with other gas systems at your establishment?
- Do you use the manufacturer user's instructions or NIOSH certification labels to adjust the airflow for airline respirators?
- Do you have a written change-out schedule for air-purifying gas/vapor filters?
- Do you use dust masks (filtering-facepiece respirators) to protect only against dusts, but not gases or vapors?

Unless you can answer “yes” to each of the above questions, you may need to do some work to improve your standing with respect to OSHA regulations and NIOSH recommendations.

Needed: Improved Respiratory Protection Programs

It is no surprise that respirators are used extensively among employees of ARTBA contractor member companies, since the companies are frequently engaged in dusty operations. The survey data indicates, by the frequency of potential inadequacies, that there is a widespread opportunity for improvement of respiratory protection programs. It is the obligation of each ARTBA member to consider where their respiratory protection program stands with respect to the OSHA requirements and NIOSH recommendations.

The nationwide survey data gathered by NIOSH and BLS indicate that approximately 2,460 establishments with 30,100 employees using respirators within *Heavy Construction, Except Buildings* have three or more indicators of a potentially inadequate respiratory protection program.

There are challenging barriers that ARTBA member companies must overcome which demand further work by all parties involved, including NIOSH. Those problems demand heightened vigilance of respirator use under the difficult circumstances of the construction workplace.

Recommendations

Findings from the BLS/NIOSH Survey and from the focus groups indicate a clear need for better respiratory protection programs in construction. Employers who suspect their respiratory protection program is in need of improvement should consider contacting the OSHA free confidential consultation service available for small businesses in every state. OSHA has a “Small Entity Compliance Guide for the Respiratory Protection Standard” available at the OSHA web site www.osha.gov. Other resources are the American Road and Transportation Builders Association at www.artba.org/ and the American Industrial Hygiene Association list of consultants at www.aiha.org.

Additional work by organizations such as NIOSH, ANSI, OSHA, and the respirator manufacturers is needed to:

1. Identify interventions that would assist employers (especially small businesses) and employees in improving the effectiveness of respirator use,
2. Select and evaluate interventions that are tailored for specific workplaces, and
3. Modify respirator designs to reduce previously-listed barriers to respirator use.

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Figure 1

Number of Construction Establishments Using Air-Purifying Respirators to Protect Employees from Indicated Substances.

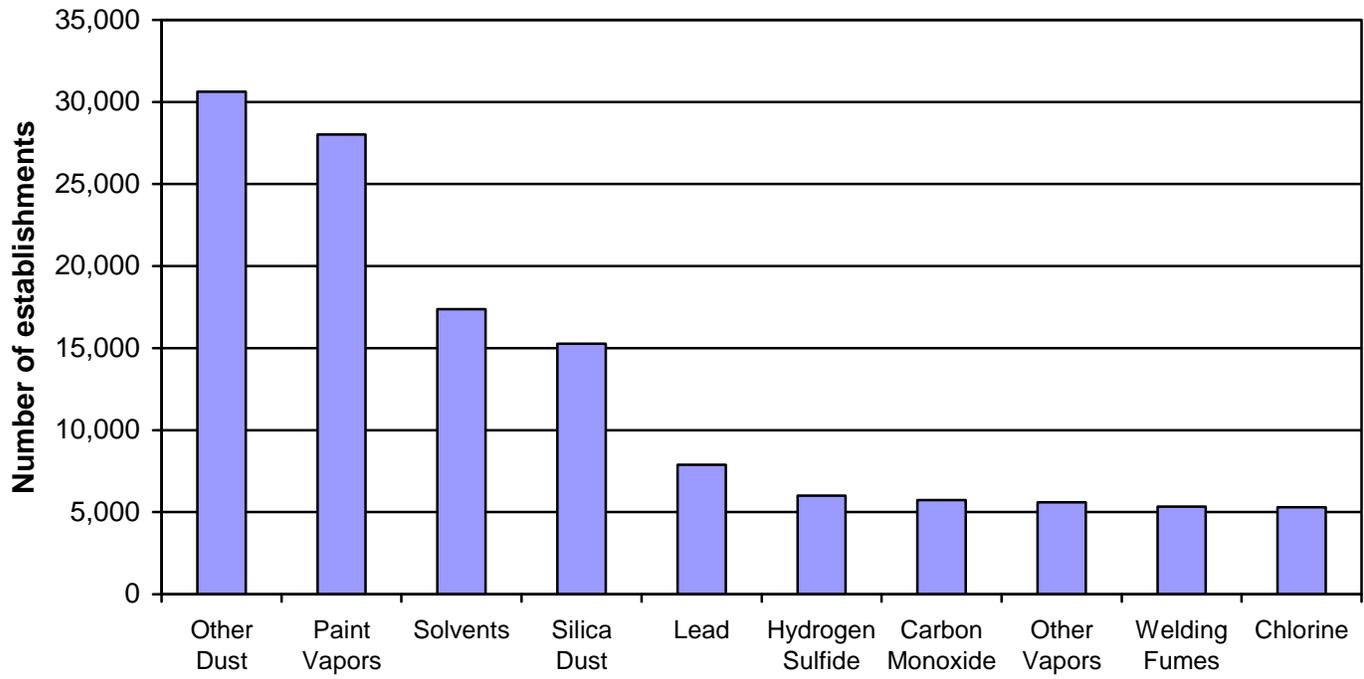


Figure 2
Percent of Respirator Using Establishments with Selected Numbers
of Indicators of Potentially Inadequate Respirator Programs

