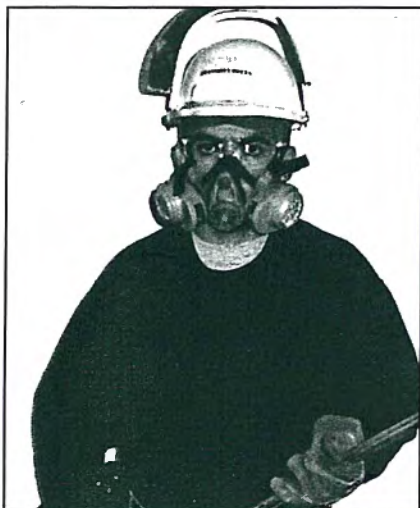


RESPIRATOR USE AND PRACTICES BY NATIONAL DEMOLITION ASSOCIATION MEMBER COMPANIES

Brent Doney,¹ Mark Greskevitch,¹ and Dennis Groce²



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 Administration (OSHA) regulations² and NIOSH recommendations.³

This report focuses on information from the survey of companies in Construction, Special Trade Contractors,⁴ which includes many National Demolition Association members. The report describes findings from focus groups (arranged by the National Demolition Association and conducted by NIOSH) about respiratory protection, such as respiratory 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 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

Special Trade Contractors has a slightly lower overall percentage of required respirator use than construction establishments as a whole (9.4% compared to 9.6%), but employees of Special trade Contractors are more likely to use respirators than construction employees as a whole (10.0% compared to 8.9%). Figure 1 shows that "Other dusts", "Paint vapors", "Solvents", and "Silica dust" were the substances for which respirators were most frequently used in the construction industry.

POTENTIAL RESPIRATOR PROGRAM INADEQUACIES

Figure 2 shows that 81% of respirator-using Special Trades Contractors establishments had at least three indicators of a potentially inadequate respiratory protection program, as measured against program features that are either required by OSHA or recommended by NIOSH.

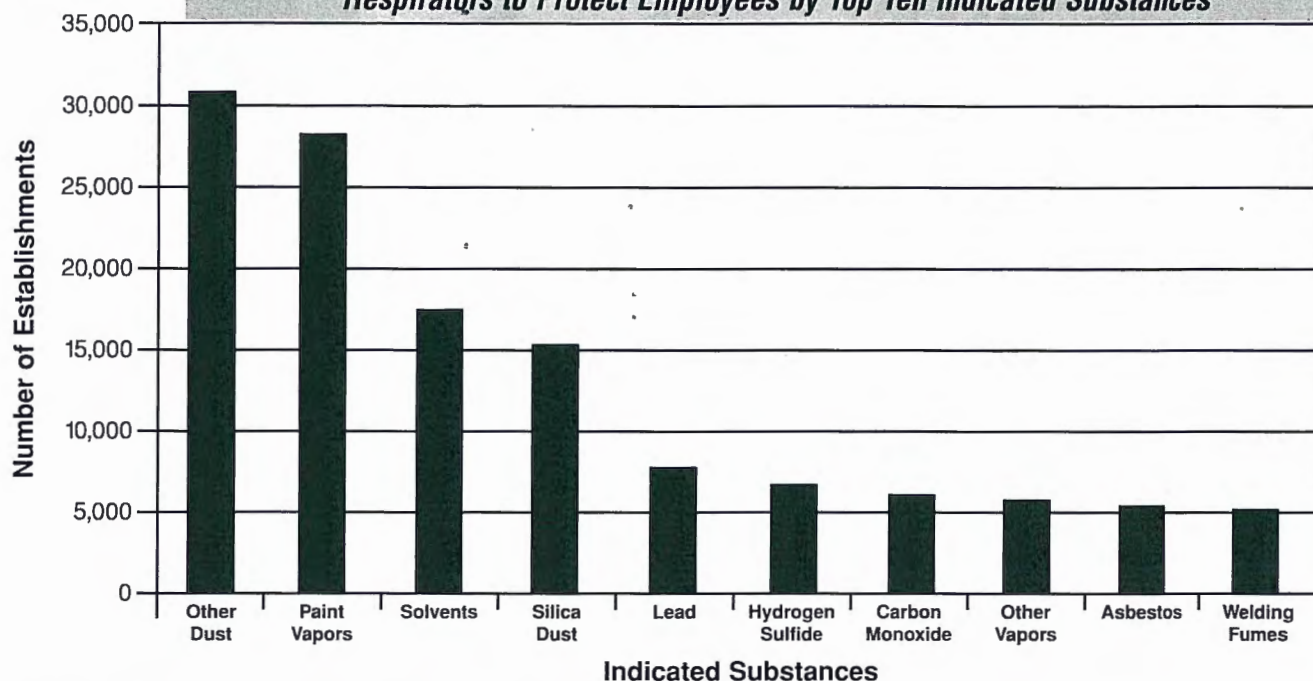
NIOSH-NATIONAL DEMOLITION ASSOCIATION FOCUS GROUPS

NIOSH also conducted a series of National Demolition Association arranged focus groups to obtain information directly from (a) union employees, and (b) management representatives. The National Demolition Association recruited company safety personnel, management staff, or union workers from National Demolition Association (contractor) members to participate in eight focus groups conducted between March and November, 2004. The focus groups (each with four to eight participants) were held in conjunction with other meetings being attended by the company representatives.

FOCUS GROUP FINDINGS

- The size of the companies ranged from 10 to 750 employees.
- Some of the companies worked in all fifty states.
- Respirators were used extensively during demolition and other work performed by these demolition companies. The type of work included demolition of houses and buildings, process equipment demolition in refineries, chemical and process plants, hospital renovations, demolition of steel mills, bridge work, hazardous waste abatement, asbestos abatement, lead abatement, earthwork (excavation), concrete work, and industrial nuclear work.

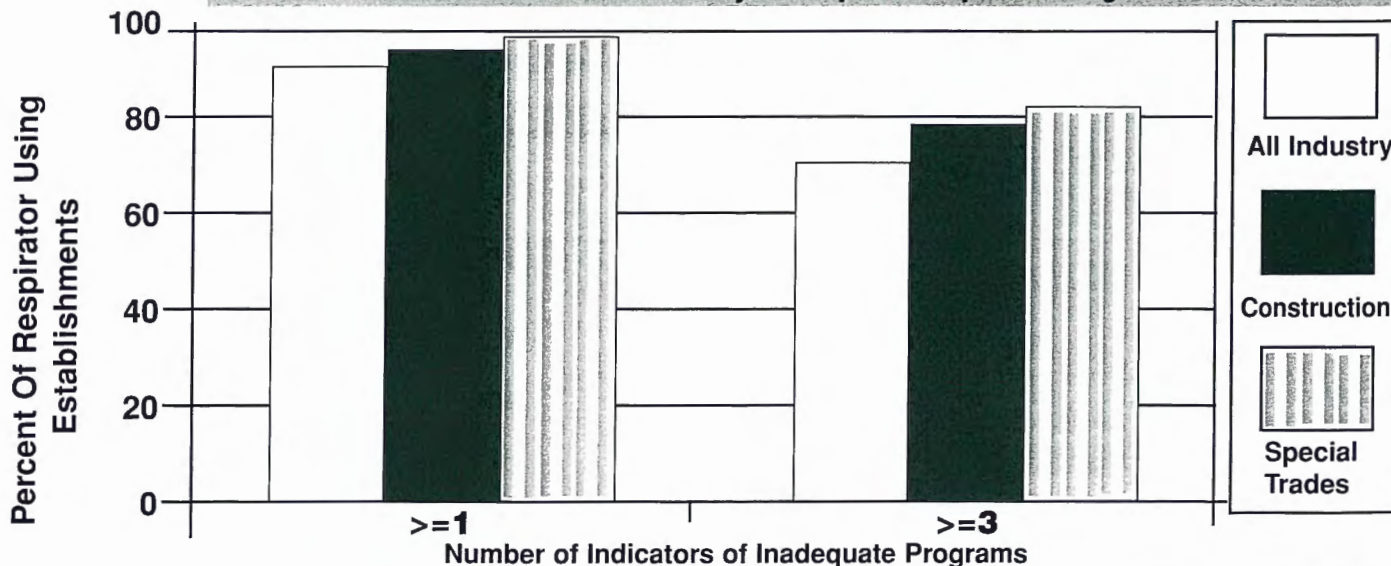
FIGURE 1 *Number of Construction Establishments Using Either Air-Purifying or Air-Supplied Respirators to Protect Employees by Top Ten Indicated Substances*



EXPOSURE TO SUBSTANCES (in alphabetical order):

- Abrasive blasting agents
- Arsenic
- Asbestos
- Cadmium
- Carbon monoxide
- Chlorine
- Concrete dust and silica
- Diesel and gasoline fuels
- Dust from drywall
- Fluorine
- Histoplasmosis (Pigeon droppings and soil)
- Hydrogen sulfide
- Ionizing radiation
- Lead (from paint, torch cutting)
- Man-made mineral fibers
- Mold
- PCBs
- Welding fumes

FIGURE 2 *Percent of Respirator Using Establishments with Selected Numbers of Indicators or Potentially Inadequate Respirator Programs*



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

- Wetting – use of water to suppress dust
- Mechanization:
 - Use of shears instead of manual torching
 - Equipment to break concrete
- Long torches for burning (i.e., 6 to 10 feet)
- Standing upwind when cutting
- Enclosed cabs on equipment
- Use of ventilation (negative air/fresh air machines)
- Scrubbers on diesel-powered front-end loaders for interior work

BARRIERS TO EFFECTIVE RESPIRATOR USE

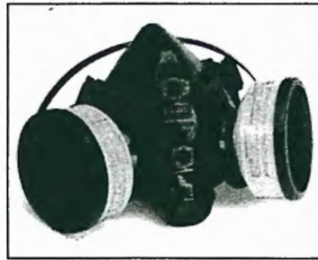
The focus group discussions identified several barriers (in the opinion of the participants) to effective respirator use. These barriers have been classified by the authors into four groups: 1) respirator use and design, 2) industry/worksite, 3) management, and 4) worker factors. Some barriers could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

RESPIRATOR USE & DESIGN FACTORS

- High ambient temperatures (sweating, heat stress, rash)
- Lack of comfort
- Fogging of full facepiece respirators, and safety glasses with half mask respirators
- Difficulty wearing other PPE with respirators (hard hats, ear muffs, eye protection, and face shield interfere with respiratory seal)
- Increasing filter resistance (especially when wet)
- Insufficient color indicators for saturation for chemical cartridges
- Visual obstruction from respirator (hoods & full facepiece)
- Communications 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

- High costs of respirator programs (including respirators, filters, training, and medical evaluations)
- 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

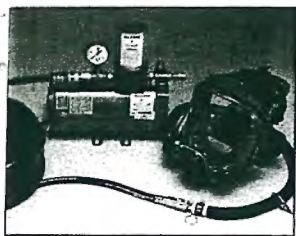
COMPARING NATIONAL DEMOLITION ASSOCIATION FOCUS GROUP AND NATIONAL SURVEY FINDINGS

The NIOSH/National Demolition Association 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.

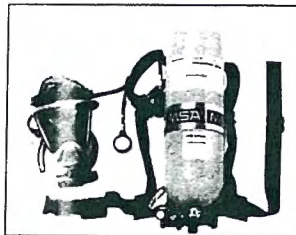
Of the substances that prompted respirator use for the construction industry as estimated by the nationwide survey, eleven were also reported by the National Demolition Association focus group. Furthermore, the focus group participants reported a number of barriers to effective respirator use that are 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 National Demolition Association 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 National Demolition

Association 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 33,000 establishments with required respirator use within Special Trade Contractors have three or more indicators of a potentially inadequate respiratory protection program.

Clearly, there are challenging barriers that National Demolition Association 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 also has a "Small Entity Compliance Guide for the Respiratory Protection Standard" available at the OSHA web site www.osha.gov. Other resources are the National Demolition Association at www.demolitionassociation.com 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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Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the National Institute for Occupational Safety and Health.

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