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# Respiratory Protection Program



# RESPIRATORY PROTECTION PROGRAM

For

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(Company Name)

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(Street Address)

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(City, State, Zip code)

As required by (29 CFR §1910.134)

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## **Preface**

Truck bed lining products have protected vehicles from wear and tear over many years through the application of polyurethane, polyurea or polyurea hybrid systems. Though the spray application of these products protects the truck bed, the actual spraying of the truck bed liner (TBL) requires specific handling and care. Virtually all truck bed lining products use methylene diphenyl diisocyanate (MDI), a material that belongs to the class of chemicals known as diisocyanates. Diisocyanates such as MDI have been known to cause irritation of the eyes, nose, throat, lungs and skin. MDI also may cause allergic reactions (sensitization) of the skin and lungs. When sprayed, the potential for exposure is even higher; therefore, in such environments, respirators are necessary. Where respirators are necessary to protect the health of employees, the Occupational Safety and Health Administration (OSHA) requires a respiratory protection program (29 CFR §1910.134). The purpose of this document is to describe the elements of a model respiratory protection program for the TBL industry.

Though not exhaustive, the information provided in this document may assist TBL application facilities in the development of a respiratory protection program. Be aware that there may be other federal, state, and local regulations that apply to the operations at your worksite beyond those mentioned in this document. Respiratory protection, however, is only one element of a worker protection program for TBL application facilities. Respirators, coupled with other protective measures such as appropriate ventilation and additional personal protective equipment, can help minimize the risk of exposure to MDI while applying spray-on truck bed liners.

# RESPIRATORY PROTECTION PROGRAM

For:

\_\_\_\_\_  
(Company Name)

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## I. Purpose and Scope

The purpose of this program is to protect \_\_\_\_\_  
(company name)  
employees from respiratory hazards, so as to be in compliance with the Occupational Safety and Health Administration's (OSHA's) requirements for a respiratory protection program, as identified in the Respiratory Protection Standard (29 CFR §1910.134).

Engineering controls, such as an enclosure (i.e., a contained application room) with ventilation, is the first line of defense towards the protection of an employee's safety and health during spray-on TBL operations. However, these controls may not be completely effective in controlling airborne hazards. When effective engineering controls are not feasible a respirator, in combination with other types of personal protective equipment, must be used. The tasks requiring respirator use, which are associated with the preparation and application of spray-on TBLs, are outlined in Table 1.

### A. Mandatory Use of Respirators

**(29 CFR §1910.134(c)(1))** "In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the **employer shall establish and implement a written respiratory protection program** with worksite-specific procedures. The program shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use. The employer shall include in the program the following provisions of this section, as applicable."

\_\_\_\_\_ has determined that employees tasked with  
(company name)  
the preparation and application of TBLs are potentially exposed to respiratory hazards. All employees performing these tasks, therefore, must wear the designated equipment, or equipment providing greater or equivalent protection.

Situations or tasks that may potentially expose workers to respiratory hazards include:

- During specific routine work practices/processes or tasks as identified in Table 1;
- Other situations where there is exposure to air contaminants above a specific exposure limit;
- If respirators or PPE are necessary to protect employee health;
- During some non-routine or emergency operations (for example, clean-up of hazardous chemical spills).

In all cases, employees participating in this program do so at no cost to themselves. The expenses associated with training, medical evaluations, and equipment will be covered by the company.

<b>TABLE 1 Required Respirator Use</b>		
<b>Respirator Type</b>	<b>Task</b>	<b>Respiratory Hazard*/ Permissible Exposure Limit (PEL)</b>
Full-Face Supplied Air Respirator (tight fitting facepiece)	Applying a spray-on TBL	MDI PEL-C <sup>1</sup> / 0.02 ppm
Full-Face Supplied Air Respirator (loose (helmet/hood) fitting facepiece)	Applying a spray-on TBL, if sprayer has facial hair or condition preventing seal of respirator against face	MDI PEL-C1/ 0.02 ppm
Air-Purifying Cartridge Respirator (e.g., organic vapor cartridge)	Solvent wipe for cleaning surfaces; applying UV topcoats	Solvents (e.g., acetone/1000 ppm or isopropyl alcohol/400 ppm)
Filtering Facepiece (e.g., dust mask)	Sanding of the TBL surface	Particulates not otherwise regulated (e.g., nuisance dust)

\* This field will need to be adapted/expanded so as to account for the potential regulatory hazards that are specific to your TBL system.

<sup>1</sup> The PEL for MDI is 0.02 ppm as a Ceiling Limit or Ceiling Value. A Ceiling Limit is not to be exceeded at any time during the work day (29 CFR (symbol for section) 1910.1000(a)(1))

## **B. Voluntary use of respirators**

If an employee desires to wear a respirator during certain operations in a non-hazardous environment (i.e., voluntary use), the request will be reviewed on a case-by-case basis. In any event, an employee may use the respirator provided or may provide his/her own respirator for voluntary use, if; (1) doing so does not jeopardize the employee's health or safety, or that of his/her co-workers and/or (2) the equipment itself does not create a workplace hazard and the company has approved the use. In addition, the employer must provide employees voluntarily using tight-fitting respirators with a medical evaluation, as well as the cleaning, maintenance, and storage procedures provided for in this program (29 CFR §1910.134; Appendix D).

Employees voluntarily wearing dust masks (filtering facepiece) or escape-only respirators are not subject to the program's medical evaluation. However, per OSHA requirements their equipment must be clean and free of contamination, and not interfere with the employee's ability to work safely.

## **II. Program Administration**

### **A. Program Administrator Responsibilities**

**(29 CFR §1910.134(c)(3))** "The employer shall designate a program administrator who is qualified by appropriate training or experience that is commensurate with the complexity of the program to administer or oversee the respiratory protection program and conduct the required evaluations of program effectiveness."

\_\_\_\_\_ is the **Program Administrator**  
(Program Administrator's name)  
**responsible for administering the Respiratory Protection Program including reviewing and updating this plan as necessary.**

The Program Administrator's duties include the following:

- Identifying work areas, processes, or tasks that require workers to wear respirators, and evaluating the associated hazards; routine operations and reasonably foreseeable emergency situations associated with the operations are considered when assessing where respiratory protection is necessary
- Selecting appropriate and approved respiratory protection options

- Monitoring respirator use to ensure that respirators are used in accordance with their certifications
- Arranging for and/or conducting training
- Ensuring proper storage and maintenance of respiratory protection equipment
- Conducting qualitative fit testing
- Administering the medical surveillance program
- Maintaining required program records
- Evaluating the respiratory protection program; and
- Updating the written program, as necessary

## **B. Supervisor Responsibilities**

Supervisors are responsible for seeing that the Respiratory Protection Program is implemented in their work areas in accordance with OSHA standards. In addition to being knowledgeable about the program requirements for their own protection, supervisors also must see that the program is understood and followed by the employees under their supervision.

Supervisory duties include the following:

- Seeing that supervised employees (including all new hires) receive appropriate annual training, fit testing, and appropriate medical evaluations
- Making available appropriate respirators and accessories
- Being aware of tasks requiring the use of respiratory protection
- Enforcing the proper use of respiratory protection
- Directing that respirators are properly cleaned, maintained, and stored in accordance with the program
- Monitoring work areas and operations with sufficient frequency to identify respiratory hazards and select proper equipment
- Coordinating with the Program Administrator on how to address respiratory hazards or other concerns regarding the program



### C. Employee Responsibilities

Each employee must wear his or her respirator when and where required, under the conditions specified by this program. An employee is obligated to use the equipment according to the training procedures for each model. Each employee also is responsible for the following:

- Being familiar with this program
- Caring for and maintaining the respirators as instructed, and storing them in a clean and sanitary location
- Informing the Supervisor if the respirator no longer fits well, and requesting a new one that fits properly
- Informing the Supervisor or Program Administrator of any potential respiratory hazards or other concerns regarding the program

## III. Program Elements

### A. Medical Evaluation

(29 CFR §1910.134(e)) “Medical evaluation. Using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee. Accordingly, this paragraph specifies the minimum requirements for medical evaluation that employers must implement to determine the employee’s ability to use a respirator.”

Any employee who is required to wear a respirator, or chooses to wear an air-purifying respirator (APR) voluntarily, must first pass a medical evaluation and have medical approval before wearing the equipment on the job. Voluntary use of filtering facepieces (i.e., dust masks) such as \_\_\_\_\_, and individuals equipped with escape-only respirators, are excluded from this requirement.

(insert type(s) of dust mask used)

***Employees are not permitted to wear respirators until a physician has determined that they are medically able to do so. Employees refusing the medical evaluation cannot work in areas requiring respirator use.*** The evaluation is conducted using the questionnaire provided in Appendix D, or an actual examination that obtains the same information. All examinations and questionnaires are to remain confidential between the employee and the physician or other licensed health care professional (PLHCP).

The medical evaluation will be conducted by: \_\_\_\_\_

(name of clinic, or name of physician/PLHCP)

### **Evaluation Procedures**

- Every employee requiring a medical evaluation is given a copy of the medical questionnaire in Appendix D, along with a stamped envelope addressed to the physician or other PLHCP. The employee is to complete the confidential questionnaire during his/her work shift and mail it in the envelope provided.
- To the extent feasible, the company will accommodate employees unable to read the questionnaire. At an employee's request, someone other than Program Administrator may be asked to assist in reading the document. If this is not possible, the employee will be sent directly to the PLHCP for a medical evaluation.
- Follow-up medical exams are given to employees as required by the OSHA standard, or as deemed necessary by the PLHCP.
- Employees can speak with the PLHCP about their medical evaluation.
- After an employee has received approval and started using a respirator, additional medical evaluations will be conducted under the following circumstances:
  1. The employee reports signs and/or symptoms related to his/her ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing
  2. The PLHCP or Supervisor informs the Program Administrator of a reevaluation need
  3. Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation, or
  4. A change occurs in the workplace conditions that may result in an increased physiological burden on the employee

### **Determination of fitness**

The Program Administrator will provide the PLHCP with a copy of this program. The Program Administrator also will provide the PLHCP with the following information for each employee requiring evaluation:

- The respirator equipment's type and weight
- Use frequency and duration
- Expected work effort
- Additional personal protective clothing/equipment to be used, and
- Estimated temperature and humidity extremes expected in the work area
- where the respirator is to be used.

The PLHCP provides an assessment of each employee's physical ability to wear a respirator and perform the assigned work. Such evaluations will be provided in writing and must include the following information:

- A determination of whether or not the employee is medically able to use a respirator
- Any limitations on respirator use related to the medical condition of the employee or to the workplace conditions in which the respirator will be used
- The need, if any, for follow-up medical evaluations

## **B. Respirator Selection**

**(29 CFR §1910.134(a)(2))** "Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protection program which shall include the requirements outlined in paragraph (c) of this section."

The Program Administrator has selected respirators to be used on site based on the hazards to which workers are exposed in the TBL application process and also in accordance with OSHA standards. The Program Administrator has conducted a hazard evaluation of the TBL spray-on lining process. The results of the current hazard evaluation are the following:

1. **Prep Cleaning:** The surface is cleaned with a solvent-dampened rag. In order to minimize spillage and exposure to solvent vapors, a plunger can is used to dispense a small amount of solvent onto the rag. The cleaning step is conducted in a ventilated area; however, a conservative approach would require employees to wear air-purifying respirators (APRs) equipped with organic vapor (OV) cartridges during the solvent wipe step.
2. **Priming of Surfaces:** On certain surfaces, primer application may be required. If the use of primer is necessary, the primer can be applied by brushing, rolling, or spraying. Due to the extremely low vapor pressure of the MDI component, exposure to airborne isocyanate is only likely if the primer is sprayed. However, a conservative approach would be to require employees to wear an APR, equipped with organic vapor/P-100 cartridges, during the non-spray primer application step. If the primer is sprayed, see section 3 below.
3. **Spray Application of Lining:** During the spray application of our TBL product, the employee can be exposed to airborne mist/spray which contains MDI vapor/mist, potentially above the OSHA PEL-C of 0.02 ppm. Though ventilation controls are in place, employees are required to wear a supplied air respirator (SAR) during spraying of the TBL product. A tight fitting facepiece is recommended but, in the case of facial hair, glasses, etc., a loose fitting facepiece (e.g., hood) is acceptable.

OSHA currently assigns a SAR with a full facepiece, operated in the pressure demand mode, an Assigned Protection Factor (APF) of 1000; a loose-fitting facepiece (e.g., hood) SAR has an APF protection factor of 251.

4. **UV Topcoat Application:** UV topcoats, used to provide custom colors for the protective lining, are solvent based. Therefore, application of the UV topcoat, whether brushed, rolled or sprayed, involves exposure to solvent vapors. This step is conducted in a ventilated area. Nevertheless, to further reduce exposure to solvent vapors, employees are required to wear APRs, equipped with OV cartridges, during this step. If the topcoat is spray-applied, spray paint cartridge with particulate pre-filter should be used.

The Program Administrator will revise and update the hazard assessment as needed (based on changes to the work process or engineering controls). Further, respirators are to be certified by the National Institute for Occupational Safety and Health (NIOSH) and shall be used in accordance with the terms of that certification. Filters cartridges must be labeled with the appropriate NIOSH approval label, per OSHA requirements.

### **C. Respirator Fit Testing**

**(29 CFR §1910.134(f))** “Fit testing. This paragraph requires that, before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used. This paragraph specifies the kinds of fit tests allowed, the procedures for conducting them, and how the results of the fit tests must be used.”

Fit testing is required for employees wearing respirators with a negative or positive pressure tight-fitting facepiece. The fit test is conducted using the make, model, and size of respirator the employee will be wearing on the job.

Fit testing is conducted:

- Prior to initial use of the respirator
- If a different respirator facepiece (size, style, model or make) is used
- When there are changes in the employee’s physical condition that could affect respiratory fit (e.g., obvious change in body weight, facial scarring, etc.)

A qualitative fit test (QLFT) procedure is approved for the respirators used under current conditions at \_\_\_\_\_ .  
(company name)

The Program Administrator will conduct fit tests following the OSHA approved Bitrex Solution Aerosol QLFT protocol. See Appendix A for the Bitrex Respirator Fit Test Procedure and Appendix B for the Respirator Fit Test Record.

## **D. Respirator Use**

### **1. General Use Instructions**

Each time a respirator is worn, the wearer must conduct a 'user seal check'. Employees may select either the positive or negative pressure check. Additional PPE, combined with respirator use, may be necessary to adequately prevent exposure. The use of eye, face or skin protection may be required during certain processes. Employees should consult the process supervisor for the required equipment.

Tight fitting facepiece respirators are not permitted for use if:

- An employee has facial hair that interferes with either the sealing surface of the respirator and the face, or interferes with the valve function
- Corrective glasses/goggles or other personal protective equipment interferes with the seal of the facepiece
- Any other condition interferes with the facepiece seal.

The employee must vacate the respirator use area for the following reasons:

- To wash his/her face and respirator facepiece, as necessary to prevent respirator-induced eye or skin irritation
- If vapor or gas breakthrough is detected
- If there is a change in breathing resistance
- If there is facepiece leakage, or
- To replace the respirator or change the cartridge/canister.

### **2. Cleaning, Maintenance, and Storage**

(29 CFR §1910.134(c)(1)(v)) Requirement: "Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators."

Respirators are to be regularly cleaned and disinfected according to the manufacturer's instructions. APR's are to be cleaned and disinfected as often as necessary. SARs and emergency use respirators are to be cleaned and disinfected after each use.

## **Cleaning**

These steps are to be followed for cleaning and disinfecting respirators, unless the manufacturer directs otherwise:

- Disassemble respirator, removing all filters, canisters, or cartridges
- Wash the facepiece and associated parts in a mild detergent with warm water
- (Do not use organic solvents or bleach)
- Rinse thoroughly in clean, warm water
- Wipe the respirator with disinfectant wipes (70% isopropyl alcohol) to kill germs
- Air dry in a clean area or use clean disposable paper towels to blot excess moisture
- Reassemble the respirator and replace any defective parts (noting the condition of the headstraps and valve flaps)
- Place in a clean, dry plastic bag or other airtight container

The Program Administrator is responsible for providing an adequate supply of cleaning and disinfecting supplies. If supplies are low, employees must notify their Supervisor or the Program Administrator.

## **Maintenance**

Respirators are to be properly maintained at all times so that they function properly and adequately protect the employee. Maintenance involves a thorough visual inspection for cleanliness and/or defects. Worn or deteriorated parts are to be replaced prior to equipment use. No components are replaced or repairs made beyond those recommended by the manufacturer.

The following checklist will be used when inspecting respirators:

- Facepiece: cracks, tears, holes, facemask distortion, cracked or loose
- lenses/face shield
- Head straps: breaks, tears, broken buckles/clasps, overstretched elastic bands
- Valves: residue/dirt, cracks or tears in valve material, absence of valve flap
- Filter/Cartridges: proper cartridge for hazard, approval designation, intact gaskets, cracks or dents in housing
- Air Supply Systems: breathing air quality/grade, condition of supply hoses, hose connections, settings on regulators and valves

Defective respirators or those with defective parts are to be taken out of service immediately. Employees should notify the Program Administrator about all respirator defects. The Administrator then decides whether to; (1) temporarily take the respirator out of service until it can be repaired, (2) have it repaired, or (3) dispose of it if the problem is irreparable.

### **Storage**

APRs are to be stored in a clean, dry area, and following the manufacturer's recommendations. Employees must inspect and clean their own respirators according to the provisions of this program and see that the equipment is stored in plastic bags or airtight containers. Each bag/container is to be marked with an employee name, and only that particular employee can use it for their equipment storage.

The Program Administrator will store spare filters and spare respirator components in an appropriate place.

### **3. Cartridge Change-Out Schedules**

Based on discussions with respirator manufacturers regarding the workplace exposure conditions for the TBL industry, employees wearing APRs with organic vapor cartridges shall change cartridges on their respirators at the end of each work week for the continued effectiveness of the respirators. However, if odors or irritation are experienced, employees are encouraged to change out cartridges immediately. Employees wearing APR with P-100 filters for protection against dust and other particulates must change their cartridges when they experience difficulty breathing (i.e. resistance).

### **E. Training**

(29 CFR §1910.134(c)(1)(viii)) "Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance."

The Program Administrator provides training to respirator users and their supervisors on:

1. Content of our respiratory protection program
2. Responsibilities of employees and supervisors
3. Requirements of OSHA's respiratory protection standard

All training occurs prior to any respirator use in the workplace. Supervisors receive their training prior to supervising employees required to use respirators. The training program covers the following topics:

- Elements of respiratory protection program
- The information covered under OSHA Standard (29 CFR §1910.134)
- Respiratory hazards encountered at the worksite
- Proper selection and use of respirators
- Additional PPE
- Respirator limitations
- How to perform user seal (fit) checks
- Fit testing
- Emergency respirator use procedures
- Respirator maintenance and storage
- Medical signs and symptoms limiting effective respirator use

Employees are required to demonstrate their understanding of the topics covered in the training through hands-on exercises and a written quiz. The Program Administrator documents respirator training. Refer to Appendix C for a copy of the Respirator Protection Training Quiz. This documentation includes the type, model, and size of respirator on which each employee has been trained and fit tested. Employees are retrained annually, or as needed (i.e., relocation to another department using a different type of respirator).

## **IV. Program Evaluation**

**(29 CFR §1910.134(l))** “Program evaluation. This section requires the employer to conduct evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult employees to ensure that they are using the respirators properly.”

The Program Administrator will conduct periodic evaluations of the workplace to see that the provisions of this program are being implemented. These evaluations include regular consultations with both the employees using respirators and their supervisors. This is done to identify areas for improvement and to address problems. Review of records, site inspections and periodic air monitoring also assist in program review.



## **V. Documentation and Recordkeeping**

The Program Administrator maintains the following records:

- A written copy of this Program and the OSHA standard (this information is available to any interested employee).
- Training and fit testing records. Further, these records are updated as new employees are trained; when an existing employee receives refresher training; and/or when a new fit test is conducted.
- Written recommendations from the PLHCP on an employee's ability to use respirators.

The OSHA website hosts additional information about topics such as respiratory fit testing procedures, user seal check procedures, respiratory cleaning procedures, and the OSHA Respiratory Medical Evaluation Questionnaire. You can access OSHA's website at [www.osha.gov](http://www.osha.gov)

## Appendix A

# Bitrex Respirator Fit Test Procedure

### 1.0 Bitrex Fit Test Instructions

1.1 All Bitrex Fit Tests are to be performed as follows

1. **Purpose:** The purpose of this test is to meet OSHA Standard (29 CFR §1910.134)
2. **Scope:** The bitrex fit test is conducted so the person being fit tested can detect the taste of the bitrex sensitivity solution. Once detection is confirmed, the person is tested using the bitrex fit test solution with the respirator to detect breakthrough.
3. **Related Procedures and Other Documents:**
  - 3.1 Bitrex Qualitative Fit Test Kit Instructions Part No. 2041 Allegro Industries
  - 3.2 MSDS Sheet Bitrex Fit Sensitivity Solution #1
  - 3.3 MSDS Sheet Bitrex Fit Test Solution #2
  - 3.4 Respirator Fit Test Record (Appendix B)
  - 3.5 Respirator Protection Training Quiz (Appendix C)

### 2.0 Equipment

- 2.1 Fit test kit
- 2.2 Test hood
- 2.3 Nebulizer #1 (sensitivity)
- 2.4 Nebulizer #2 (fit test)
- 2.5 Sensitivity Solution
- 2.6 Fit Test Solution
- 2.7 Stopper
- 2.8 Canister cartridge

### 3.0 Bitrex Fit Test Solution Instructions

- 3.1 Remove Sensitivity Test solution and with tip pointed upward, pinch along the length of the applicator tube to crush the glass ampoule.
  - 3.1.1 It is important to keep the applicator tip pointed upward when pinching the tube to prevent the solution from squirting out during the pinching process.
- 3.2 Remove the end cap from the nebulizer and insert the applicator tip into the u section opening of the nebulizer. Squeeze and transfer the solution from the applicator into the neck of the nebulizer until the applicator is empty

- 3.2.1 Do not remove the end tip of the applicator tube. It contains a porous filter, which is designed to filter out the crushed glass. The tip contains a hole for solution transfer.
- 3.2.2 Replace protective end cap on nebulizer until test is ready to be performed
- 3.3 Repeat operations 3.1 and 3.2 for the fit test solution ampoule using the appropriate nebulizer.

#### **4.0 Bitrex Sensitivity Test Instructions**

Note: The subject should not eat, drink or chew gum for at least 15 minutes before the test.

- 4.1 Place the hood over the subject without a respirator
- 4.2 Position the hood forward so there is about six inches between the subject's face and the window. This is important to ensure even dispersion of the aerosol and clearance for the respirator during the fit test.
- 4.3 Instruct the subject to breath through their mouth with their tongue extended.
- 4.4 Using the sensitive test solution Nebulizer #1 inject the aerosol into the hood through the hole in the window.
  - 4.4.1 Inject 10 times, fully squeezing and collapsing the bulb.
  - 4.4.2 The nozzle is directed away from the nose and mouth of the person being tested.
- 4.5 Ask the subject if they can detect the bitter taste of the solution.
  - 4.5.1 If tasted, note the number of squeezes on the Respirator Fit Test Record.
  - 4.5.2 All testing results are in groups of 10 and should be noted on the paperwork in groups of 10 squeezes.
- 4.6 If the subject does not taste the sensitivity solution, inject an additional 10 full squeezes of the aerosol into the hood.
  - 4.6.1 Repeat with 10 more squeezes
- 4.7 If the Bitrex is not tasted after 30 squeezes, the subject is unable to taste Bitrex and may not perform the fit test.

#### **5.0 Bitrex Fit Test Work Instructions**

- 5.1 Have the subject don and fit check the respirator per the manufacturers instructions.
  - 5.1.1 Use the particulate filter provided (N95-P100 rating)
- 5.2 Place the hood over the subject with the respirator on
- 5.3 Position the hood forward so there is about six inches between the subject's face and the window. This is important to ensure even dispersion of the aerosol and clearance for the respirator during the fit test.

- 5.4 Instruct the subject to breathe through their mouth with their tongue extended.
- 5.5 Using the sensitive test solution Nebulizer #2 inject the aerosol into the hood through the hole in the window.
  - 5.5.1 Inject 10 times, fully squeezing and collapsing the bulb.
  - 5.5.2 To maintain an adequate concentration of aerosol during this test, inject one-half of the number of squeezes used in step 5.5.1, every 30 seconds
- 5.6 Ask the subject if they can detect the bitter taste of the solution any time during the following exercises for 60 seconds each.
  - 5.6.1 Normal breathing
  - 5.6.2 Deep breathing...breaths should be deep and regular.
  - 5.6.3 Turning head from side to side- movement should be complete with one turn every second.
  - 5.6.4 Nodding head up and down- movement should be complete with one turn every second.
  - 5.6.5 Talking, reciting the alphabet or reading aloud a prepared text. The "Rainbow Passage" (see below) is suggested.
  - 5.6.6 Bending over- The test subject shall bend at the waist as if they were to touch their toes.
    - 5.6.6.1 Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
  - 5.6.7 Normal breathing
- 5.7 If the entire test is completed without the subject detecting the bitter taste of the Bitrex aerosol, the test is successful and the respirator fit is deemed adequate.
- 5.8 If the taste of Bitrex is detected the test has failed and a different respirator must be tried, and the entire procedure is repeated (sensitivity and fit tests).
- 5.9 Enter pass/fail on the Respirator Fit Test Record
- 5.10 Have subject and the trainer sign the document

## **6.0 The Rainbow Passage**

- 6.1 When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

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## Appendix B Respirator Fit Test Record (Qualitative)

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Job: \_\_\_\_\_ Glasses worn: \_\_\_\_\_

Facial hair, other: \_\_\_\_\_

Test media: ☐ Bitrex    ☐ Saccharin    ☐

Respirator Type: **A** \_\_\_\_\_ **B** \_\_\_\_\_

A. Compatible with eye glasses	_____	_____
B. Test Exercises		
1. Head stationary, normal breathing	_____	_____
2. Head stationary, deep breathing	_____	_____
3. Head turning side to side	_____	_____
4. Head moving up and down	_____	_____
5. Talking (rainbow passage)	_____	_____
C. Comfort		
1. Very comfortable	_____	_____
2. Comfortable	_____	_____
3. Barely comfortable	_____	_____
4. Uncomfortable	_____	_____
5. Intolerable	_____	_____
Pass/Fail	#	#
	_____	_____

### Assigned equipment: A

Manufacturer: _____	Model: _____	Size: _____
---------------------	--------------	-------------

### Assigned equipment: B

Manufacturer: _____	Model: _____	Size: _____
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Tested by (print name) _____	Signature _____
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Signature of trainee \_\_\_\_\_

## Appendix C

### Respirator Protection Training — QUIZ

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. A positive and negative pressure check should be conducted each time the respirator is worn? [True or False](#)
2. A dust mask is adequate protection against solvents? [True or False](#)
3. Respirators should be cleaned on a daily basis? [True or False](#)
4. The only adequate protection against MDI is from the dual-cartridge respirator?  
[True or False](#)
5. A respirator can be borrowed from a co-worker in the event that your respirator is not available? [True or False](#)
6. In order to assure a proper fit, clean shaven skin must be in contact with all respirator skin sealing surfaces at all times? [True or False](#)
7. Air-purifying respirators (APRs) can be worn for protection against MDI vapor/mist during spray-on TBL applications? [True or False](#)

## Appendix D Medical Evaluation Questionnaire

**Part A. Section 1.** (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

1. Today's date: 3/6/2008
2. Your name: \_\_\_\_\_
3. Your age (to nearest year) : \_\_\_\_\_
4. Sex (circle one): Male or Female?
5. Your height: Select ft. Select in.
6. Your weight: \_\_\_\_\_ lbs.
7. Your job title: \_\_\_\_\_
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code) : \_\_\_\_\_
9. The best time to phone you at this number: \_\_\_\_\_
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one): Select Yes or No
11. Check the type of respirator you will use (you can check more than one category):
  - ☐ a. N, R, or P disposable respirator (filter-mask, non- cartridge type only).
  - ☐ b. Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): Select Yes or No  
If "yes," what type(s):  
\_\_\_\_\_  
\_\_\_\_\_

**Part A. Section 2.** (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you **currently** smoke tobacco, or have you smoked tobacco in the last month:  
Select Yes or No
  2. Have you **ever had** any of the following conditions?
    - a. Seizures (fits): Select Yes or No
    - b. Diabetes (sugar disease): Select Yes or No
    - c. Allergic reactions that interfere with your breathing: Select Yes or No
    - d. Claustrophobia (fear of closed-in places): Select Yes or No
    - e. Trouble smelling odors: Select Yes or No
-

3. Have you **ever had** any of the following pulmonary or lung problems?
    - a. Asbestosis: [Select Yes or No](#)
    - b. Asthma: [Select Yes or No](#)
    - c. Chronic bronchitis: [Select Yes or No](#)
    - d. Emphysema: [Select Yes or No](#)
    - e. Pneumonia: [Select Yes or No](#)
    - f. Tuberculosis: [Select Yes or No](#)
    - g. Silicosis: [Select Yes or No](#)
    - h. Pneumothorax (collapsed lung): [Select Yes or No](#)
    - i. Lung cancer: [Select Yes or No](#)
    - j. Broken ribs: [Select Yes or No](#)
    - k. Any chest injuries or surgeries: [Select Yes or No](#)
    - l. Any other lung problem that you've been told about: [Select Yes or No](#)
  4. Do you **currently** have any of the following symptoms of pulmonary or lung illness?
    - a. Shortness of breath: Yes/No
    - b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline: [Select Yes or No](#)
    - c. Shortness of breath when walking with other people at an ordinary pace on level ground: [Select Yes or No](#)
    - d. Have to stop for breath when walking at your own pace on level ground: [Select Yes or No](#)
    - e. Shortness of breath when washing or dressing yourself: [Select Yes or No](#)
    - f. Shortness of breath that interferes with your job: [Select Yes or No](#)
    - g. Coughing that produces phlegm (thick sputum): [Select Yes or No](#)
    - h. Coughing that wakes you early in the morning: [Select Yes or No](#)
    - i. Coughing that occurs mostly when you are lying down: [Select Yes or No](#)
    - j. Coughing up blood in the last month: [Select Yes or No](#)
    - k. Wheezing: [Select Yes or No](#)
    - l. Wheezing that interferes with your job: [Select Yes or No](#)
    - m. Chest pain when you breathe deeply: [Select Yes or No](#)
    - n. Any other symptoms that you think may be related to lung problems: [Select Yes or No](#)
  5. Have you **ever had** any of the following cardiovascular or heart problems?
    - a. Heart attack: [Select Yes or No](#)
    - b. Stroke: [Select Yes or No](#)
    - c. Angina: [Select Yes or No](#)
    - d. Heart failure: [Select Yes or No](#)
-



- e. Swelling in your legs or feet (not caused by walking): [Select Yes or No](#)
  - f. Heart arrhythmia (heart beating irregularly): [Select Yes or No](#)
  - g. High blood pressure: [Select Yes or No](#)
  - h. Any other heart problem that you've been told about: [Select Yes or No](#)
6. Have you **ever had** any of the following cardiovascular or heart symptoms?
- a. Frequent pain or tightness in your chest: [Select Yes or No](#)
  - b. Pain or tightness in your chest during physical activity: [Select Yes or No](#)
  - c. Pain or tightness in your chest that interferes with your job: [Select Yes or No](#)
  - d. In the past two years, have you noticed your heart skipping or missing a beat:  
[Select Yes or No](#)
  - e. Heartburn or indigestion that is not related to eating: [Select Yes or No](#)
  - f. Any other symptoms that you think may be related to heart or circulation problems: [Select Yes or No](#)
7. Do you **currently** take medication for any of the following problems?
- a. Breathing or lung problems: [Select Yes or No](#)
  - b. Heart trouble: [Select Yes or No](#)
  - c. Blood pressure: [Select Yes or No](#)
  - d. Seizures (fits): [Select Yes or No](#)
8. If you've used a respirator, have you ever had any of the following problems?  
(If you've never used a respirator, check the following space and go to question 9:)
- a. Eye irritation: [Select Yes or No](#)
  - b. Skin allergies or rashes: [Select Yes or No](#)
  - c. Anxiety: [Select Yes or No](#)
  - d. General weakness or fatigue: [Select Yes or No](#)
  - e. Any other problem that interferes with your use of a respirator:  
[Select Yes or No](#)
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: [Select Yes or No](#)

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you **ever lost** vision in either eye (temporarily or permanently): [Select Yes or No](#)
11. Do you **currently** have any of the following vision problems?
  - a. Wear contact lenses: [Select Yes or No](#)
  - b. Wear glasses: [Select Yes or No](#)
  - c. Color blind: [Select Yes or No](#)
  - d. Any other eye or vision problem: [Select Yes or No](#)
12. Have you **ever had** an injury to your ears, including a broken ear drum:  
[Select Yes or No](#)
13. Do you **currently** have any of the following hearing problems?
  - a. Difficulty hearing: [Select Yes or No](#)
  - b. Wear a hearing aid: [Select Yes or No](#)
  - c. Any other hearing or ear problem: [Select Yes or No](#)
14. Have you **ever had** a back injury: [Select Yes or No](#)
15. Do you **currently** have any of the following musculoskeletal problems?
  - a. Weakness in any of your arms, hands, legs, or feet: [Select Yes or No](#)
  - b. Back pain: [Select Yes or No](#)
  - c. Difficulty fully moving your arms and legs: [Select Yes or No](#)
  - d. Pain or stiffness when you lean forward or backward at the waist:  
[Select Yes or No](#)
  - e. Difficulty fully moving your head up or down: [Select Yes or No](#)
  - f. Difficulty fully moving your head side to side: [Select Yes or No](#)
  - g. Difficulty bending at your knees: [Select Yes or No](#)
  - h. Difficulty squatting to the ground: [Select Yes or No](#)
  - i. Climbing a flight of stairs or a ladder carrying more than 25 lbs:  
[Select Yes or No](#)
  - j. Any other muscle or skeletal problem that interferes with using a respirator: [Select Yes or No](#)

## Disclaimer

This Respiratory Protection Program Guidance Document has been prepared to provide helpful ideas and information for parties interested in undertaking truck bed lining (TBL) operations using products that contain methylene diphenyl diisocyanate (MDI). The respiratory protection program and guidelines provided are based on OSHA requirements under (29 CFR §1910.134), and should help a facility review and evaluate its own respiratory protection program. Many parts of this guidance document provide examples and possible text that a facility can use for its program. However, the actual terms and examples used for a facility's program are subject to each individual facility's independent review and determination.

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