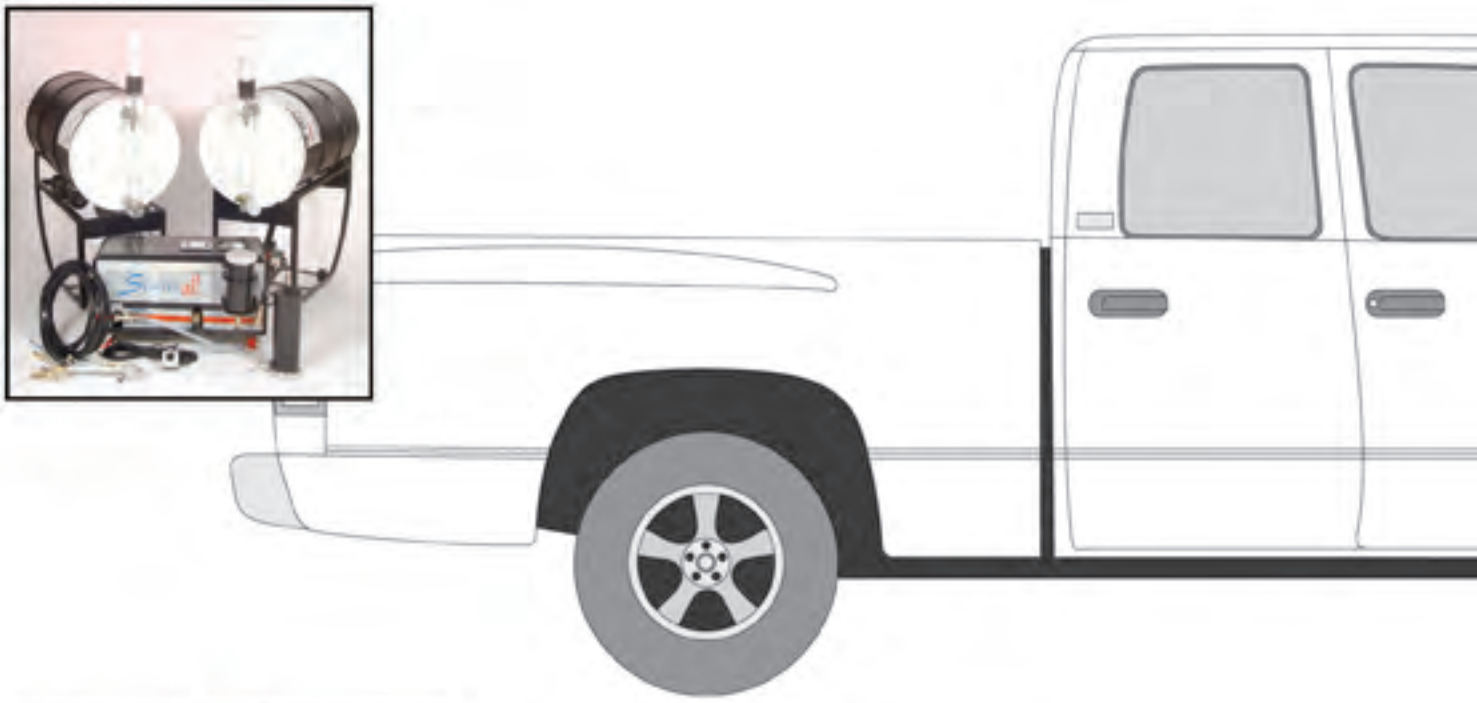
ALLIANCE FOR THE
POLYURETHANES
INDUSTRY

Spray-on Truck Bed Liner Applications Using MDI/PMDI; Seven Important Points



Here are seven important points you will want to know when applying spray-on truck bed liner (TBL) products containing MDI (methylene diphenyl isocyanate) and/or polymeric MDI (PMDI).

The Alliance for the Polyurethanes Industry (API), prepared this guide to help remind professionals like you about important health and safety aspects of working with MDI during spray-on truck bed liner applications. Although MDI is a commonly used material in truck bed liner systems, it is not the only material in the system that may be potentially harmful to your health; therefore, it also is important to read all the information contained in your supplier's Material Safety Data Sheets (MSDSs) for the particular TBL product you are using. MSDSs are the primary sources of extensive and specific information on MDI, PMDI and other TBL system ingredients.

This guidance document is intended to help truck bed liner companies educate its workers and provide appropriate worker protection related to MDI/PMDI. Neither API nor its member companies are responsible for worker protection, or worker protection programs, for truck bed liner companies.

1. WHAT IS MDI?

The acronym MDI was derived from one of the chemicals many names, methylene diphenyl diisocyantate. Polymeric MDI is a mixture of monomeric MDI and polymeric MDI and is a brownish liquid at room temperature. MDI/PMDI is one component used in the application of polyurethane and polyurea coatings, which are used in truck bed lining (TBL) products; typically referred to as the "A-side" or the "iso-side" of the system. Although the spray application of these products protects the truck bed, the actual spraying of the truck bed liner requires special handling and care.

2. RECOGNIZING POTENTIAL HEALTH HAZARDS

Contact with excessive amounts of MDI can be harmful to your health. When MDI is sprayed, you may be overexposed by:

- Breathing high airborne concentrations of MDI
- Getting MDI on your skin
- Getting MDI in your eyes
- Swallowing MDI

In addition to what is identified in the product's MSDS, here are some examples of the effects of overexposure and some recommended first-aid procedures:

Inhalation: If MDI is sprayed or heated, there is a chance of overexposure. MDI can irritate your nose and lungs. With overexposure, you may feel tightness in your chest and have difficulty breathing. If you continue to be overexposed, you may become sensitized (i.e., allergic) to MDI. Once sensitized, the effects may start as soon as you begin to work with the product, or later on in the day after you've stopped working with the product (e.g., when you've left work). If you are sensitized you may experience health effects even when airborne MDI levels are very low and may be at risk for experiencing an asthma attack. If this happens, DO NOT CONTINUE TO WORK WITH MDI; asthma attacks can be life-threatening. If you start to feel any of the symptoms listed above, let your supervisor know immediately and seek medical attention.

If you suspect someone has become overexposed, remove the person to an area with fresh air, and try to keep them calm and warm, but not hot. If they are having difficulty breathing, a qualified person may provide oxygen. If they stop breathing, have trained first aid personnel give artificial resuscitation. Seek emergency medical attention.

Skin Contact: Getting MDI on your skin may result in allergic sensitization. In addition, animal tests have indicated that skin contact, followed by an inhalation exposure, may result in lung sensitization. If these symptoms occur seek immediate medical attention. Repeatedly getting MDI on your skin may cause discoloration, redness, swelling or blistering; this also could lead to skin sensitization. It is best, therefore, to conduct your work to avoid skin contact, but if you get MDI on your skin, wash it thoroughly with soap and flowing water as soon as possible after exposure.

Eye Contact: Getting MDI in your eyes can be painful and could cause tearing and irritation. If you get MDI in your eyes, wash them immediately with a continuous flow of lukewarm, low pressure water, preferably from an eyewash fountain, for at least 15 minutes. Seek immediate medical attention.

Ingestion: Swallowing MDI can cause irritation. If you swallow MDI, do not induce vomiting. Wash out

the mouth with water. The person affected should be made to rest and seek immediate medical attention.

Additional information about these potential health hazards is available through the product's MSDS and in literature on the API website at www.polyurethane.org.

3. PROTECTING YOURSELF FROM MDI EXPOSURE

With proper precautions and the use of personal protective equipment (PPE), you can protect yourself from overexposure to MDI during the application of your TBL system.

A: For tasks that do not involve spraying (such as cleaning equipment), but where you may have direct contact with MDI liquid (at room temperature), you should use:

- Safety glasses or goggles
- MDI-resistant chemical gloves (i.e., nitrile)
- MDI-resistant clothing (i.e., apron or coveralls)
- Safety shoes or boots

B: When spraying a truck bed liner system, you should use:

- An approved supplied air respirator (as outlined in your company's Respiratory Protection Program)*
- Safety goggles (where applicable)
- MDI-resistant chemical gloves (i.e., nitrile)
- MDI-resistant long-sleeve coveralls or full body suit with hood
- MDI-resistant fitted boots/booties

For other tasks where there is the potential for exposure to MDI vapor/mist, follow the guidelines suggested in Point 3B. Workers not wearing the correct PPE should not enter the spray enclosure until the airborne MDI levels are below the allowable limits. Additional information to help protect you is available through the product's MSDS and in literature on the API website at www.polyurethane.org.

4. WEARING A RESPIRATOR

According to the Occupational Safety and Health Administration's (OSHA) Respiratory Protection Standard, you are required to have a medical evaluation and receive medical approval before using a respirator. After approval is given, a fit test is required. The fit test is conducted using the respirator you will be wearing on the job. Each time you use a tight-fitting facepiece, you must conduct a 'user seal check'. However, tight-fitting facepiece respirators are not permitted for use if:

- You have facial hair that interferes with either the sealing surface of the respirator and the face, or interferes with the valve function;
- You wear corrective glasses/goggles or if other personal protective equipment interferes with the seal of the facepiece; and,
- Any other condition interferes with the facepiece seal.

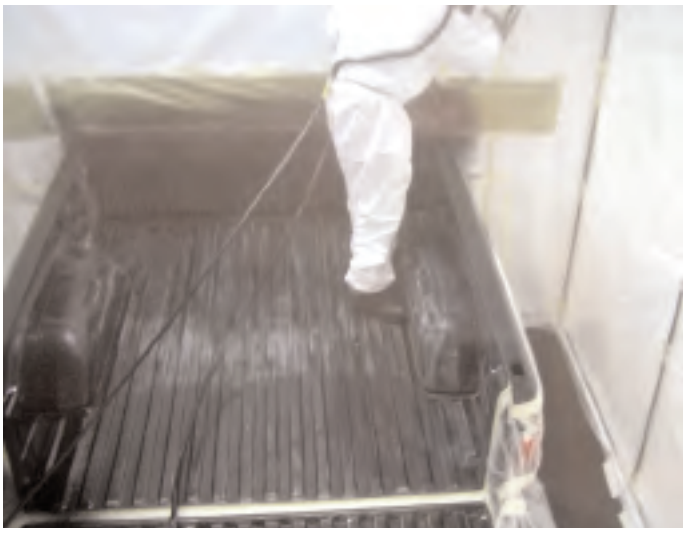
Respirators should be regularly cleaned and disinfected according to the instructions provided by the respirator manufacturer. Deteriorated parts must be replaced prior to equipment use. Respirators should be inspected regularly for:

*The level of respiratory protection provided by the supplied air system is dependent upon the facepiece that is chosen; therefore consult your company's respiratory protection program and MSDS for guidance.

- Cracks, tears, holes, facemask distortion, cracked or loose lenses/face shield;
- Breaks, tears, broken buckles/clasps, over-stretched elastic bands in head strap;
- Residue/dirt, cracks or tears in valve and absence of valve flap; and,
- Breathing air quality/grade, condition of supply hoses, hose connections; settings on regulators and valves.

Defective respirators or those with defective parts should be taken out of service immediately. Notify your supervisor about all respirator defects.

Additional information about respirators is available through the product's MSDS, in your company's Respiratory Protection Program, and in literature on the API website at www.polyurethane.org.



5. CONTAINING THE OVERSPRAY

Appropriate ventilation, combined with a properly designed spray enclosure, is needed in the TBL industry to help minimize exposure to MDI. The use of a ventilated enclosure helps to contain spray mists and vapors that develop during TBL application. Further, exhaust ventilation systems with efficient filters help to capture the spray mist, which reduces the potential exposure to people outside the building.

While there is no "set " standard as to which truck bed liner enclosure design is most effective at controlling MDI vapors/mists, here are some guidelines that are known: 1) the enclosure should maintain a negative pressure with respect to the outside environment (i.e., the air should be pulled into the enclosure not pushed out of the enclosure); 2) it should be sized to allow the truck bed to fit, while giving you space to move safely within the enclosure; and 3) as previously mentioned in Point #3, you should wear the appropriate level of personal protective equipment.

A preventive maintenance program for the ventilation system will help you to know when to change filters, check the airflow, etc. A truck bed liner should not be sprayed until the ventilation system is operating properly and the right level of PPE is being used. Workers needing to enter the enclosure while an applicator is applying a bed liner, or shortly after the application has stopped, also should wear the appropriate level of PPE.

6. COMPLETING THE JOB

PPE should be removed only after exiting the spray booth and completion of cleanup. PPE also should be worn while cleaning MDI-contaminated equipment and while handling any containers with MDI (i.e., drums, buckets, etc). The type of PPE needed should follow the guidelines presented in Point #3.

It is a good work practice to keep all work clothing at work. Any clothing contaminated with MDI should be removed and properly disposed of or cleaned. Leather items cannot be decontaminated. Any contaminated leather items including shoes, belts,

and watch bands or clothing, which have been exposed to MDI, should be properly discarded. MDI is a reactive chemical; therefore, the MDI container should be kept sealed to reduce contamination. However, resealing MDI containers contaminated with water or polyol can cause a buildup of pressure in the container due to the generation of carbon dioxide. A pressurized container may rupture. MDI can self-react in a fire or at very high temperatures and release carbon dioxide. Carbon dioxide can build pressure in sealed containers sufficient to cause rupturing of the container.

Additional information to help protect you is available through the product's MSDS and in literature on the API website at www.polyurethane.org.

7. RESPONDING TO EMERGENCIES

Fires, spills, and other emergencies involving MDI require an immediate response by trained and knowledgeable personnel. If you have not been trained to respond to an emergency, leave the area immediately and notify the appropriate emergency response personnel. **If you need additional guidance, call CHEMTREC® at 1-800-424-9300.** CHEMTREC® operators are available 24 hours a day, seven days a week. CHEMTREC® is a communication center dedicated to assisting emergency responders handling incidents involving hazardous materials.

October 2006 **Reference Number: AX-405**

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