

Driver Hazardous Materials Safety Guide



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Handling and transporting hazardous materials

Commercial vehicle drivers handling and transporting hazardous materials have a responsibility to prevent injuries and property damages for themselves, their employer and, most importantly, the general public, including motorist or bystanders. The Federal Hazardous Materials Regulations clearly define a hazardous material as “a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce.”¹



For drivers and motor carriers transporting hazardous materials, this means that they each share a responsibility to know their obligations as required by the Federal Hazardous Materials Regulations, most specifically how the requirements apply to their duties. This safety guide is intended for commercial vehicle drivers engaged in road transport only, not rail, marine or air transport. It will focus on the dangers and risks of transporting or handling hazardous materials prior to a trip, during transit, when loading, unloading and parking a vehicle carrying hazardous materials, depending on the particular hazardous

materials being transported. Using this safety guide will not replace or meet the requirements of hazardous materials training for hazardous materials employee requirements as found in the Federal Hazardous Materials Regulations.² However, the information provided will include basic knowledge about transporting hazardous materials. In addition, this guide will take a broader view than the regulations to include information about non-regulatory practices and safety tips developed within the industry that may enhance compliance and reduce the likelihood of accidents.

¹ (Title 49 Subtitle B, Chapter I, Subchapter C, Part 171, Subpart A, §171.8)

² (Title 49, Subtitle B, Chapter I, Subchapter C, Part 172, Subpart H, 172.704)

I. Hazardous Materials: The Basics



Hazardous Materials Table³

Materials considered hazardous by the Federal Hazardous Materials Regulations are listed in the hazardous materials table. The table provides the proper shipping name, hazard class, I.D. number, packing requirements and any special provisions for the material being shipped.

Shipping Papers⁴

Shipping papers are required for most hazardous material shipments. They provide detailed information about what is being transported and what hazards are involved. The format of the shipping paper may vary, but all are required to include the following for each hazardous material listed:

- Proper shipping name
- Hazard class or division number
- ID number
- Packing group
- Total quantity

When a hazardous material and other materials are described on the same shipping paper, the hazardous material description entries must be:

- Entered first,
- Entered in a contrasting color (or highlighted in a contrasting color – for reproduced copies of the shipping paper only),
- Identified by an “X” placed before the proper shipping name in a column captioned “HM.” The “X” may be replaced by “RQ” (Reportable Quantity), if appropriate.

The shipping paper must also provide a 24-hour emergency response telephone number that can be called in the event of a leak, spill or incident. Drivers should follow their company emergency reporting procedures and ensure that the proper authorities are notified of any leak, spill or collision as well.

Shipping papers and the Emergency Response Guidebook information provided on Safety Data Sheets and in the Emergency Response Guidebook must be within the driver’s reach, even while buckled into the safety belt. Acceptable options for the placement of these documents while driving would include the passenger seat or in a driver’s side-door pouch.

Markings and Labels⁵

How a material is marked, labeled and placarded will depend upon whether it is contained in *bulk* or *non-bulk* packaging.

Non-bulk packaging is:

- For liquids — a maximum capacity of 119 gallons or less.
- For solids — a maximum net mass of 882 pounds or less.

Bulk packaging is:

- For liquids — a capacity greater than 119 gallons
- For solids — a net mass greater than 882 pounds, or a capacity greater than 119 gallons.

³ (Title 49 of the Code of Federal Regulations (49 CFR Title 49-Subtitle B- Chapter I- Subchapter C, 172.1)

⁴ (49 CFR Title 49-Subtitle B- Chapter I- Subchapter C 172.200-207)

⁵ (Title 49 of the Code of Federal Regulations (49 CFR Title 49-Subtitle B- Chapter I- Subchapter C)

Hazard Warning⁶

Most non-bulk packaging must display hazard warning labels. These color- and symbol-coded labels provide immediate warning of a material's hazards.

Primary Labels – indicate a material's most hazardous property.

Subsidiary Labels – indicate other, less hazardous properties.

- Examples of each of the labels can be found on the US DOT, Pipeline and Hazardous Materials Safety Administration website: www.phmsa.dot.gov/

Placarding

Most hazardous materials being transported by road that require placarding must have a placard showing on all four sides of the trailer or container. However, there are materials that require placarding at any weight. Employees and supervisors should, at a minimum, receive training for all of the hazardous materials they may be required to transport, and should have completed a hazardous materials training as required by the Hazardous Materials Regulations.

Furthermore, the driver must make sure the placards are appropriate and securely affixed before moving the vehicle. Placards must remain in place until the hazardous materials have been unloaded. Empty (clean) trailers should not be placarded for hazardous materials. Be sure that empty and clean trailers have all placards removed or changed before the trailers are to be used to transport other materials, hazardous or non-hazardous.

Prior to beginning a trip, be sure that each placard on a transport vehicle, bulk packaging, freight container or aircraft unit load device is:

- located clear of any appurtenances and devices (e.g., ladders, pipes, etc.)
- located away from any markings (such as advertising) that might substantially reduce its effectiveness (a minimum distance of 76 mm, or three inches, is required)
- maintained by the carrier so that the format, legibility, color and visibility of the placard will not be reduced in any way — due to damage, road dirt or dust or the deterioration of the placard itself.
- displayed to be read horizontally
- placed, as far as practicable, so that dirt or water is not directed to it from the wheels of the vehicle
- affixed to a background of contrasting color, or have a dotted or solid line outer border that contrasts with the background color securely attached or affixed or placed in a placard holder⁷



⁶ (Title 49 of the Code of Federal Regulations (49 CFR Title 49-Subtitle B- Chapter I- Subchapter C)

⁷ (172.516)



Prohibited Placarding

Placards may not be displayed on a transport vehicle, portable tank or freight container unless:

- Transported material is a hazardous material
- Placarding represents a hazard of the material
- Placarding conforms to the regulations⁸

There are some exceptions allowed regarding placarding of hazardous materials. These can be found in the Hazardous Materials Table whenever there are questions about the applicable placarding requirements. It is important to ensure that the information displayed, including placards, labeling and marking, is correct for the type of hazardous materials being transported. Emergency response personnel will rely on the accuracy of the information when initiating on-scene response procedures. If first responders implement the wrong procedures, the consequences could be severe, including potentially life-threatening consequences to first responders and others on the scene.

Packing Groups⁸

In addition to classifying cargo by hazard class, the DOT assigns packaging group requirements based on the degree of risk presented by the cargo being shipped.

There are three (3) packing groups:

- Packing Group I — great danger
- Packing Group II — medium danger
- Packing Group III — minor danger

Packing groups affect the type of packaging that can be used. The more hazardous a material is, the more stringent the packaging requirements will be. For example: batteries, wet filled with acid fall under Packing Group III, while battery acid shipped in separate containers fall under Packing Group II.

Hazard Zones

Hazard Zones are applied to certain hazardous materials to indicate the degree of danger when being transported. Hazard zone means one of four levels of hazard (Hazard Zones A through D) assigned to gases, as specified in §173.116(a), and one of two levels of hazards (Hazard Zones A and B) assigned to liquids that are poisonous by inhalation, as specified in §173.133(a) in the regulations. It is important to know and be aware that hazard zones are used to indicate acute inhalation toxicity of certain gases and vapors, as specified in §173.133(a). The shipping papers will indicate the hazard zone and inhalation hazard, if present. Placards are also used to indicate a higher degree of danger than most other materials transported by road.

Materials poisonous by inhalation must be handled correctly as specified in the Federal Hazardous Materials Regulations to avoid endangering people. The description of toxic-by-inhalation materials for hazard zones includes the following:

- Hazard Zone A: More than one liter (1.08 quarts) per package of a “material poisonous by inhalation,” as defined in 171.8 of 49 CFR and meets the criteria for “Hazard Zone A,” as specified in 173.116(a) or 173.133(a) of 49 CFR
- Hazard Zone B: A “material poisonous by inhalation,” as defined in 171.8 of the regulations, that meets the criteria for “Hazard Zone B in a bulk packaging (capacity greater than 450 L [119 gallons])
- Hazard Zone C & D: “Material poisonous by inhalation,” “Hazard Zone C,” or “Hazard Zone D,” as specified in 173.116(a) of this title, in a packaging having a capacity equal to or greater than 13,248 L (3,500 gallons).

⁸ (CFR 49 172.502(a))

⁸ (Title 49 of the Code of Federal Regulations (49 CFR Title 49-Subtitle B- Chapter I- Subchapter C)

II. General hazardous materials handling and transport



Segregation of Hazardous Materials⁹

This section applies to materials that meet one or more of the hazard classes defined in this subchapter. Some common examples are:

- Division 4.2 materials may not be stored, loaded and transported with Class 8 liquids.
- Division 6.1 Packing Group I, Hazard Zone A material may not be stored, loaded and transported with Class 3 material, Class 8 liquids, and Division 4.1, 4.2, 4.3, 5.1 or 5.2 materials.

There are more requirements listed in the hazardous materials segregation table concerning treatment for segregation of specific hazardous materials within other hazard classes. If you have questions and wish to view the table in its entirety it can be found at *PART 177 - CARRIAGE BY PUBLIC HIGHWAY. Subpart C - Segregation and Separation Chart of Hazardous Materials.*¹⁰

General Hazardous Materials Loading and Unloading

Depending upon which hazardous materials are being loaded/unloaded and the type of trailer/container being used, always follow shipper/consignee procedures. Loading and unloading personnel must always remain within 25 feet (8 meters) and have an unobstructed view of the vehicle. Refer to customer's procedures for Personal Protective Equipment (PPE) while loading and unloading. It is recommended that each vehicle have a fully equipped spill/containment kit and that each employee is aware of the kit and appropriately trained on how to safely use it in the event of a spill. Drivers should always confirm with a customer representative their relevant emergency plans (such as evacuation routes and how to summon help if an emergency occurs) and site regulations (such as yard speed limits, signage, R/R crossings, etc.).

⁹ (Title 49 of the Code of Federal Regulations (49 CFR Title 49-Subtitle B- Chapter I- Subchapter C §177.848.)

¹⁰ PART 177 - CARRIAGE BY PUBLIC HIGHWAY. Subpart C - Segregation and Separation Chart of Hazardous Materials



Perform a loading/unloading area inspection including the following steps:

- Stop the vehicle, set the parking brake, remove the keys from the ignition, extinguish any smoking materials, liter or anything that could be an ignition source, exit the cab using a 3-point dismount technique and chock the trailer between the tandems.
- Wear appropriate personal protective gear as required.
- Do not use cellular phones during any loading or unloading procedure.
- Perform a walk-around inspection and visually check the loading/unloading area to ensure that the area is free of product spills or personnel.
- Look for obstructions, tripping hazards, open flames or other sources of ignition.
- Determine the best place to position your vehicle and, as a best practice, try to avoid blind-side backing if possible.
- Be sure to determine that the product is transferred to the correct customer tank or receptacle.

Choose a place that will not compromise your safety, the safety of the public, or the safety of your vehicle. If a backing maneuver is required, make it immediately after collecting safety cones and performing

a walk-around inspection. Use safety cones in high-traffic areas to maintain a clear backing area.

CAUTION: Remember to always use a 3-point dismount technique when entering/exiting the tractor.

Tanker Loading/Unloading

Select a level area so that the transfer hoses will easily reach the connections on the customer tank. (A transfer hose that is crimped or under tension may leak or create other unsafe conditions during the transfer.)

Equipment should, if possible, be spotted on level grade and 25 feet (8 meters) from any vent that emits vapors. Check the area within 10-foot radius for any possible source of ignition. Never allow anyone to smoke in the vicinity of loading/unloading.

Place safety cones for backing reference and mark hazards near your approach path to the loading/unloading area. Check for hot brakes and spills/leaks during cone placement. Safety cones should be placed around the vehicle to deter vehicles and pedestrians from entering the loading/unloading area. Always follow location delivery procedures.

Hazardous Materials Security Measures

Basic security

- Do NOT discuss product type, capacity, or method of operations with unauthorized personnel.
- Report suspicious or unusual activity to your manager immediately.
- Do not handle any unknown object – STOP, IDENTIFY and NOTIFY
- Report any offers to purchase the product.
- If you encounter anyone acting suspiciously, notify your immediate supervisor/logistics and/or law enforcement personnel immediately of the location and situation.

Driver security

- A driver should be equipped and qualified in accordance with company procedures and governmental regulations for hazardous materials security.
- A driver should also have completed Hazardous Material Training and IMDG Code Training, if required, that includes general awareness, safety and function-specific requirements.

Tractor security requirements

When stopped or parked, comply with the following procedure unless you are in immediate attendance within 25 feet of the vehicle.

- Ensure that windows, cab doors and external access compartments are closed and locked. Check this by attempting to open each one.
- Remove the ignition key when the vehicle engine is not running or the vehicle is parked and unattended.
- If in-transit, safeguard ignition and keys.
- Avoid leaving the vehicle in idle while unattended.

Trailer security

- Secure all cabinets tools, hoses or operating compartments when not in use (i.e., loading, unloading or being maintained).
- When in-transit, all compartments should be secured and locked. Glad hand secondary locks should be used when the trailer is either dropped or unhooked in any unsecured area.
- If the person is performing duties that are required of a vehicle operator such as placing warning devices, the driver is not required to be in attendance with the vehicle but must have placed the shipping papers on the driver's seat or in the door pouch before leaving the vehicle unattended.
- If door or container seals are used, be sure to record the seal number, date, time and location each time a seal is applied or removed, including the person or agency installing/removing the seal and the reason for installing/removal seals.

Journey security

- Be alert when driving. Look for vehicles following you. If you believe you are being followed, take precautions as specified in your company security procedures.
- When leaving your facility, be aware of any possible surveillance of your facility or your truck.
- Don't discuss your cargo, destination or trip specifics with people you don't know or on open channels.
- Keep adequate communication devices (cell phones, etc.) in case of emergency. Do not communicate information about cargo to unauthorized parties.
- Maintain regular communication with dispatchers. Communicate any delays or incidents that may alter a pre-determined schedule.
- Stay on designated highways and specified delivery routes.
- Ensure that all shipping papers are in order and the manifest is correctly completed at all times.
- The manifest must be on the driver's seat for any federal, state or local authority to view when equipment is parked in a public place and the driver is away.
- Be extra alert at "hit points" — red lights, stop signs, railroad crossings, stop walks. In Transit – make sure ALL compartment doors are locked.

General Loading and unloading requirements¹¹

- (a) Packages secured in a motor vehicle. Any package containing hazardous material not permanently attached to a motor vehicle must be secured against shifting, including relative motion between packages, within the vehicle on which it is being transported and under conditions normally incident to transportation. Packages having valves or other fittings must be loaded in a manner to minimize the likelihood of damage during transportation.
- (b) Each package containing a hazardous material-bearing package orientation markings prescribed in §172.312 of the hazardous materials regulations must be loaded on a transport vehicle or within a freight container in accordance with such markings and must remain in the correct position indicated by the markings during transportation.
- (c) No smoking while loading or unloading. Smoking on or about any motor vehicle while loading or unloading any Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizers), or Division 2.1 (flammable gas) materials is forbidden.
- (d) Keep fire away during loading and unloading. Extreme care must be taken in the loading or unloading of any Class 1 (explosive), Class 3 (flammable liquid), Class 4 (flammable solid), Class 5 (oxidizing), or Division 2.1 (flammable gas) materials into or from any motor vehicle to keep fire away and to prevent persons in the vicinity from smoking, lighting matches, or carrying any flame or lighted cigar, pipe, or cigarette.
- (e) Handbrake set while loading and unloading. No hazardous material shall be loaded into, onto or unloaded from any motor vehicle unless the handbrake is securely set and all other reasonable precautions have been taken to prevent motion of the motor vehicle during the loading or unloading process.
- (f) Use of tools, loading and unloading. No tools likely to damage the effectiveness of the closure of any package or other container, or likely to adversely affect such package or container, shall be used for the loading or unloading of any Class 1 (explosive) material or other dangerous article.

Emergency Response Guide¹¹

In the event of an accident involving a spill you should follow these steps to secure information and protect yourself and others if possible.

- Try to limit the spread of material (if you can do so safely).
- Keep shipping papers, Safety Data Sheets and Emergency Response Guidebook readily available.
- Place emergency road warning devices, such as road reflectors, as prescribed. Many commercial fleet operators have implemented best practices regarding any incidents occurring at night. Place the opened triangle between the affected vehicle and oncoming traffic so other drivers can see the operator while placing triangles. The advantage of this practice is the opened reflector triangle provides a visual alert to oncoming vehicles that the driver is on or near the roadway as they approach.

Response Procedures

Training, knowledge, judgment and experience are the most important elements needed to cope with accidents and/or incidents involving hazardous materials. Be sure to follow company policies and procedures in the event of an emergency at the scene. For example, there should be a document containing procedures and emergency telephone numbers of those designated to help manage the consequences of a spill involving a load of hazardous materials.

The DOT Emergency Response Guidebook for hazardous materials should be onboard and part of your pre-trip inspection sequence.

- Ensure that the handbook contains all the emergency response information you may need for the products you are carrying.
- Know and understand the information. Replace any missing information or forms; if unsure, contact a supervisor or responsible party(s). Do not hesitate to ask questions.
- Be sure to follow company procedures regarding spill scene management; report the event to the company contact person and enforcement personnel and emergency responders.



Checklist

Hazardous materials pre-trip checklist

This checklist is intended as a tool to help drivers remember basic mandated procedures and industry standards regarding the loading and unloading of hazardous materials not transported in containers and tankers over 119 lbs. The items in this list should be followed in addition to customary pre-trip inspection practices required the motor carrier.

- Pre-loading** – complete vehicle inspection and note any defects. Use standard pre-trip requirements including safety equipment, emergency road reflectors, windshield and washers and scrapers
- Fire extinguisher** – fully charged, nozzle in place and appropriate for vehicle
- Lights** – marker lights, tail lights, brake light, turn signals and four way flasher lenses clean and operating as intended
- Visibility** – conspicuity tape in good reflective condition
- Communications** – a mobile communication device and emergency notification phone numbers on board
- Hazardous materials identifications** – proper labels, markings and placards are displayed. Ensure all are in good readable condition and free of defects such as missing or obscured. Ensure all items match the requirements as listed and described on the manifest or bill of lading
- Spills** – spill kit is fully supplied, including absorbent, appropriate gloves, eye protection, non-metal tools such as shovel and containers. Remember these supplies usually are intended for small spills or leaks that can be easily and completely contained before response personnel arrive on the scene
- Emergency handling** – be sure to have a company call list with approved cleanup vendors, local, state and/or federal agencies or law enforcement agencies to be notified
- Leaks** – cargo area, look for puddles, wet surfaces or audible leak of gases. Engine compartment including liquids, exhaust system, brakes and drivetrain components
- Suspension and chassis** – no cracks in frames or suspension mounting brackets
- Springs and suspension** – springs and/or suspension bags including u-bolts, mounting plates and spring leafs free of defects
- Tires and wheels** – tires are fully inflated, adequate tread depth on all positions, lug nuts free of rust or loose fitting, tire height mismatches
- Loading** – floors of trailer free of slippery surfaces, nails or holes
- Flatbeds** – inspect flatbed trailer securement devices to ensure adequate number and rating for load. Containers or pallets secured from movement and follow segregation of hazardous materials guidelines
- Dry van trailers** – ensure cargo containers, including containers, pallets or boxes are braced and secured from movement as required¹²
- Trailer doors** – overhead or barn doors work as intended to allow complete locked and sealed closure. Load packages with orientation marks (up arrows) so that the marks remain pointed up



Journey

- After loading, do not open any package during your trip.
- Never transfer hazardous materials from one package to another while in transit.
- Do not allow any smoking or any source of ignition on or near the vehicle when loading/unloading flammable (classes 3 and 4) or oxidizing (classes 5 and 2.1) materials.
- Set the handbrake on the vehicle before loading/unloading. (Note: OSHA regulations require chocking truck wheels before loading/unloading.)
- Perform periodic inspection of the load and vehicle at rest and meal stops at least after 100 miles of travel.

Unloading

- Ensure the load is parked in an area away from any materials or activities that could mix and accelerate hazardous materials involvement.
- Periodically notify appropriate personnel to ensure awareness of the load location and condition of the hazardous materials cargo.
- If manual unloading is required be sure tools and equipment are rated to be used with types of hazardous materials being unloaded or stored adjacent to other hazardous materials.

Defensive driving measures

The involvement of a motor vehicle carrying hazardous materials or substances in crashes often results in a higher degree of severity compared to crashes involving less dangerous cargo. In addition to the kind of injuries and property damage involving non-hazardous materials cargo, which often result in serious injury, death and property damage, hazardous materials can lead to conditions that expose surrounding areas to more intensive and longer lasting emergencies from fire to chemical exposures. The following safety tips are considered effective if understood and followed by commercial vehicle drivers.

Distracted driving

- Do not look away from the road ahead.
- Do not read or send a text or email messages. A vehicle traveling 80 feet per second at 55 mph = 368 feet, a dangerous act in a dynamic driving environment.
- Be observant of all mandated or company required cell phone usage policies.
- Scan ahead and around your vehicle seeking changing conditions.
- Be watchful of situations that require awareness and be ready to take appropriate actions.
- Prior to your trip, check weather conditions where you will be driving to ensure that the appropriate gear is available.
- During the trip, anticipate changing conditions based on time of day and season.

- Scan ahead when approaching intersections to look for fast moving vehicles, side roads or parking lots.
- When entering intersections be sure you cover the brake with your foot to reduce reaction time.
- Monitor vehicles as they enter and exit the space behind your vehicle.
- To improve alertness and reduce fatigue, take periodic rest stops as required and/or necessary for safe driving.
- No unauthorized passengers should be allowed. Passengers can cause distractions as well.

Avoiding vehicle rollover

The number of truck tanker rollover events each year is a continuing problem on our nation's streets and highways, judging by statistics provided by the Transportation Research Board of the National Academies.* They result in injuries and fatalities as well as environmental and property damage. The study indicates that 60% of these cargo tank truck rollovers involved tractor trailers and 40% involved straight trucks. Contrary to common belief, 31% occur on divided highways while 69% occur on undivided highways. Perhaps the most interesting statistic is that 60% of them involve speeding as a contributing factor. However, no matter what type of tank truck driven on our nations' roads and highways, the underlying causes are often the same. Please refer to the list below to learn about measures to take to avoid being involved in a rollover crash.

Tanker overturn prevention measures

According to studies investigating the causes of tanker overturn or rollover crashes, driver-related causes are the leading factors. These causes lead to at-risk behaviors and actions, which in turn lead directly to rollovers.

- Driving too fast for conditions
- Illegal maneuvering or improper turning
- Inadequate evasive action
- Poor directional control

Important risk factors with potential driver-related contributing factors are:

- Information gathering factors
 - Distraction, poor situational awareness
 - Failure to recognize a hazard
 - Inadequate visual vigilance or instances of not paying attention
- Driver state of mind
- Physiological condition
- Obesity and health
- Alcohol or drug involvement
- Vehicle control

Please use this checklist as a guide to determine your potential for being involved in a rollover event.

Pre-trip

Driver – Collect information and documents to reduce or limit information seeking while driving:

- Directions and contact information
- Shipping documents
- Current HOS status
- Working communication devices

Physical condition assessment

- Do not consume substances that reduce driving vigilance including prescription or non-prescription drugs that prohibit operation of heavy equipment, alcohol, caffeine-based beverages or illicit drugs.
- Review and report meeting the requirements of the FMCSRs concerning the fitness for duty measures for rest, on duty and driving times.

In addition to following customary pre-trip procedures you should conduct a vehicle pre-trip inspection of the following items:

- Mechanical condition, including brakes, lights, tires, air system and hoses, steering, suspension and frame, mirrors in usable condition and properly adjusted to avoid blind spots

Trip

Driver – Self-monitor instances of variance from safe driving habits including:

- Instances of following the vehicle ahead outside of recommended distances
- Instances of lane drifting
- Instances of failing to monitor vehicles approaching at intersections, parking lots or from the rear
- Instances of taking eyes off the road to look for information, adjust electronics or send/receive phone calls, voicemail, email or texts

Defying Gravity: How to avoid slipping, tripping or falling

- Be sure to take note of any irregularities on walking surfaces and surrounding area. The obvious may be hidden because of some conditions such as:
 - Surface composition such as slippery surfaces or changes in surface condition from spills, rain, snow or ice.
 - Level changes – monitoring for uneven, slippery, poorly illuminated walkways
 - Stairs – loose or rotted connecting points in stair steps, railings and supporting frame
 - Obstructions – items that are protruding into a walk area from the side, above or below
 - Foreign substance potential – walkways and especially tanker steps, rails and catwalks can become covered by a variety of substances, especially those that are oil based



Zurich

1400 American Lane, Schaumburg, IL 60196
866 219 3402 www.zurichna.com/environmental

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