Incident: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Health and Site Safety Plan

Effective: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Date)

For: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Site location)

Project Manager: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Primary ER Contractor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Manager: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#####

##### Incident: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Health and Site Safety Plan

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# Site Description

Location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ State: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Railroad Milepost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Division: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Subdivision: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Situation Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

GPS Location\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Emergency Medical Information

Is there an ambulance on-scene? Yes [ ]  No [ ]  If yes, state location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nearest hospital: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Telephone No.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Directions to hospital: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Hazard Evaluation

The following substances are known or suspected to be on the work site. Further information can be found in Section D of this plan. (Attach copies of Material Safety Data Sheets to this plan.)

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance Name** | **Physical State** | **Primary Hazard** | **Amount Released** |
|  |  |  |  |
|  |  |  |  |
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**Environmental Hazards**

 (i.e. extreme heat or cold, rough terrain, high water, etc.)

|  |  |  |
| --- | --- | --- |
| **Description of Hazard** | **Location** | **Protective Actions** |
|  |  |  |
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The following additional hazards have been identified:

|  |  |  |
| --- | --- | --- |
| **Hazard** | **Location** | **Description** |
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##

## Use the space below to describe any special hazards or procedures for this site:

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# Hazardous Substance Information

|  |  |  |
| --- | --- | --- |
| **Car Initial and Number** | **Contents** | **UN # // STCC Number** |
|  |  |  |
| **Fire /Reactivity** |
| Flash Point: | Flammable Limits: | Reacts with: |
| Health Hazards |  |  |
| Odor: | Odor Threshold (ppm): | IDLH (ppm):  |
| OSHA PEL: | TLV/TWA:  | TLV/STEL: |
| Acute Exposure Symptoms:  |
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| --- | --- | --- |
| **Car Initial and Number** | **Contents** | **UN # // STCC Number** |
|  |  |  |
| **Fire /Reactivity** |
| Flash Point: | Flammable Limits: | Reacts with: |
| Health Hazards |  |  |
| Odor: | Odor Threshold (ppm): | IDLH (ppm):  |
| OSHA PEL: | TLV/TWA:  | TLV/STEL: |
| Acute Exposure Symptoms:  |

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| **Car Initial and Number** | **Contents** | **UN # // STCC Number** |
|  |  |  |
| **Fire /Reactivity** |
| Flash Point: | Flammable Limits: | Reacts with: |
| Health Hazards |  |  |
| Odor: | Odor Threshold (ppm): | IDLH (ppm):  |
| OSHA PEL: | TLV/TWA:  | TLV/STEL: |
| Acute Exposure Symptoms:  |

|  |  |  |
| --- | --- | --- |
| **Car Initial and Number** | **Contents** | **UN # // STCC Number** |
|  |  |  |
| **Fire /Reactivity** |
| Flash Point: | Flammable Limits: | Reacts with: |
| Health Hazards |  |  |
| Odor: | Odor Threshold (ppm): | IDLH (ppm):  |
| OSHA PEL: | TLV/TWA:  | TLV/STEL: |
| Acute Exposure Symptoms:  |

|  |  |  |
| --- | --- | --- |
| **Car Initial and Number** | **Contents** | **UN # // STCC Number** |
|  |  |  |
| **Fire /Reactivity** |
| Flash Point: | Flammable Limits: | Reacts with: |
| Health Hazards |  |  |
| Odor: | Odor Threshold (ppm): | IDLH (ppm):  |
| OSHA PEL: | TLV/TWA:  | TLV/STEL: |
| Acute Exposure Symptoms:  |

*Use additional sheets as necessary to list all containers or substances involved.*

# Standard Operating Practices

The following standard railroad operating policies apply and will be observed at this site:

* Corporate policies and procedures regarding emergencies
* Operating rules and applicable notices and bulletins
* Safety rules and safe job procedures
* Job briefing policy
* Chemical hazard information program
* Occupational exposure monitoring program

These policies and rules outline the procedures applicable to normal railroad operations. Additional guidance regarding site-specific hazards and procedures will be provided verbally during Job Briefings and in writing as appendices to this plan.

# F. Safety Policy

Railroad \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is committed to being the safest short line railroad in the country. By empowering everyone with the right, the responsibility, and the resources to make safe decisions, we will accomplish our goals. Our ultimate goal is to prevent all personal injuries.

Rules cannot be written to cover everything we do on the job. Therefore, we are empowered to make decisions and take action necessary to prevent personal injuries.

Where no specific rule applies, we must rely on good judgement, following the safest course available. We may have to contact a co-worker, supervisor or manual for guidance. No action should be taken until we are fully aware of the hazards involved and have a plan to prevent injury.

### Job Briefing Procedure

Prior to performing any task requiring the coordination of two (2) or more employees, those employees involved must hold a job briefing to insure all have a clear understanding of the task to be performed and their individual responsibility and must discuss the following:

* The sequence of basic job steps.
* The potential hazards related to the job.
* Check equipment and tools before using, even if they are thought to be in good condition.
* Determine what protective equipment is required on this job.
* Establish whether everyone understands the instructions and whether it is clear to them how the job is to be performed.
* Follow up with fellow employees to ensure compliance with safe work practices.

### Chemical Hazard Job Briefing

In addition to the normal job briefing procedure, the following information must also be included in briefings at derailment sites where hazardous materials are involved:

* The chemicals involved.
* The fire and health hazards, including symptoms of exposure, of the chemicals involved.
* The personal protective equipment required and instruction for use.
* The type, frequency, and equipment to be used for environmental monitoring.
* Action levels for emergency egress of work areas.
* Description of incident control zones (e.g. Hot, Warm, Cold Zones)
* Other appropriate safety and health precautions to assure protection of all personnel on the site.

Whenever possible, this briefing shall be given to all personnel on-site including both railroad and contractor employees. However, if only the foreman of railroad or contractor personnel is given this briefing, the foreman must acknowledge that none of his or her employees will commence work around hazardous materials until those employees have been properly briefed and apprised of the site hazards.

# G. On-Site Coordination and Organization

This section identifies key short line railroad, contractor, and other personnel at the site.

|  |  |
| --- | --- |
| Senior Transportation Officer  |  |
| Liaison Officer |  |
| Safety Officer |  |
| Transportation Officer |  |
| Mechanical Officer |  |
| Engineering Officer |  |
| Hazardous Material Officer |  |
| Primary Hazmat Contractor |  |
| Industrial Hygiene Contractor |  |
| Wreck Clearing Contractor |  |
| Local Incident Commander |  |
| State Officials |  |
| Environmental Protection |  |
| Emergency Management |  |
| Federal Officials |  |
| FRA |  |
| US EPA |  |
| NTSB |  |
| Others |  |
| Medical Support |  |
| Police |  |
| Others (list) |  |

# H. Site Control

#### General Site Access

Consistent with short line railroad company policy, ICS or unified command structure, it is requested that the local police department coordinate and provide law enforcement oversite, for site access control and site security.

#### Work Zones

Work areas and exclusion zones relating to chemical hazards will initially be established by a joint agreement of railroad and emergency response supervisory personnel. These areas will be communicated to personnel on-site by standard job briefings and/or by radio communications. These areas may be modified and identified upon the arrival of skilled personnel (e.g. hazardous materials contractors). Any zones so established are identified on the *Site Map* included in this plan.

#### Standard Operating Procedures

Standard railroad operating practices utilized at this site are identified in Section E of this plan.

#### Medical Assistance

The location of medical assistance at this job site is described in Section B of this plan. The railroad will have the appropriate level of care available on the site as warranted by site hazard and work function.

#### Site Map

A general site sketch is provided on the following page.

# SITE MAP

 (Indicate site features below or attach site drawing)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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# Personal Protective Equipment

Use of personal protective equipment (PPE) by railroad employees and their contractors will be consistent with existing operating rules, policies, and practices. Specialized PPE requirements for this site are described below:

|  |  |  |
| --- | --- | --- |
| **Job Function** | **PPE LEVEL** | **Modifications/Specfications** |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |
|  | [ ]  A [ ]  B [ ]  C [ ]  D |  |

# Decontamination Procedures

#### Standard Decontamination Procedures

Where appropriate, railroad and other personnel requiring decontamination measures will utilize the appropriate materials and equipment as provided. All personnel will observe good personal hygiene practices and wash with the materials provided prior to eating or smoking.

#### Site-Specific Decontamination Procedures

|  |
| --- |
| **Location(s) of Decontamination Area:** |
| **Job Function** | **Decontamination Procedure** |
|  |  |
|  |  |
|  |  |

# K. Personnel, Air, and Environmental Monitoring

Personal Medical Monitoring

Medical monitoring of personnel will be conducted as required both as a pre- and post-entry function. Those persons exhibiting physical conditions outside the normally accepted parameters will not be allowed to make entry into hazardous areas nor wear physically demanding PPE. Provisions will be made to have trained medical personnel on the site to perform the required medical monitoring.

Personal Exposure Monitoring

An air-monitoring plan as described below will be utilized to provide data regarding the exposure of individuals to airborne and environmental contaminants. Devices that measure individual exposure (e.g. dosimeters, colorimetric badges, etc.) will be utilized as required to monitor and record personal exposure.

Air and Environmental Monitoring

Air monitoring may be conducted by railroad personnel and its contractors for the purpose of site safety, worker exposure protection, and public safety. This may include both on- and off-site monitoring. The specific types of monitoring to be used for worker protection are described below.

|  |  |  |
| --- | --- | --- |
| **Type of Contaminant** | **Device** | **Frequency** |
| Flammable Vapors |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
| Oxygen Deficiency |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
| Toxicity |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
| Organic Vapors |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
| Corrosivity |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
| Particulates |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
| Other (list): |  | [ ]  C [ ]  H [ ]  D Other (specify):  |
|  |  | **KEY**: C=Continuously, H=Hourly, D=Daily |

# L. Site Emergency Plan

## Prevention

Job briefings will be held prior to initiating specific work activities (e.g. rerailing or moving hazmat cars, “Hot Work Permit” cutting or welding on or near hazmat cars) at this site. Consistent with standard railroad policy for job briefings, such briefings will include specific measures to be taken in the event of any unusual situation, such as the need to evacuate the site work area.

## Procedures

* Upon discovery of a situation or occurrence that presents a danger to personnel at or near the site, the person making the discovery shall:
	+ Initiate the emergency signal for personnel on-site
	+ Take measures to control or abate (if safe to do so) the condition causing the emergency
* All persons not involved in controlling the hazardous condition will retreat to the pre-designated muster area
* Designated supervisors will take a head count and verify the safety of all personnel under their charge
* If outside assistance (i.e. fire department or EMS) is required, the designated supervisor will notify the local emergency 911 center for assistance
* When all personnel have been accounted for, the Senior Site Supervisor will assess the situation and authorize site re-entry as conditions warrant or permit

## Emergency Signal

Describe the site emergency signal below:

 Audible:

 Visual:

*\*The emergency radio procedure described in the Railroad Operating Rules will be in effect for railroad employees and is NOT superceded by the signal described above.*

# M. Spill Containment Plan

Where appropriate, or when required by regulation, spill containment plans and procedures may be required. A spill containment plan will be attached to this document as an addendum. When practicable, the location of spill containment equipment and measures should be indicated on the site map portion of this plan.

# N. Confined Space Entry Procedures

When required, documentation of confined space entry procedures will be attached to this plan.

# O. Medical Surveillance

Medical surveillance for railroad employees at this site will be conducted in accordance with guidelines established by the assigned railroad medical department. Contractor employees will be governed by their employing company policies.

# Review and Approval

I have reviewed and approve of the Site Safety and Health Plan.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, Railroad Hazardous Material Manager/Official

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

On-Site Supervisor Acknowledgement

Supervisors for this site must read and understand the contents of this plan. It is incumbent upon the site Supervisors to properly brief and update the employees under their direction of the site hazards and procedures.

By signing below, I acknowledge that I have reviewed and understand the contents of this plan.

|  |  |
| --- | --- |
| **Position** | **Signature** |
| Senior Transportation Officer |  |
| Senior Mechanical Officer |  |
| Senior Engineering Officer |  |
| Hazmat Emergency Response Contractor |  |
| Environmental Consulting Contractor |  |
| Wreck Clearing Contractor |  |
| Fire Department Incident Commander |  |
| Site personnel not listed above (Please print name & position) |  |
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# Job Safety Analysis

Job to be performed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Task breakdown:

**Potential Hazards (List all that apply)**

|  |  |
| --- | --- |
| **Potential Hazards** | **Critical Safety Practices** |
|  |  |
|  |  |
|  |  |

Protective clothing and equipment required: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Monitoring devices required:

Task Breakdown:

**Potential Hazards (List all that apply)**

|  |  |
| --- | --- |
| **Potential Hazards** | **Critical Safety Practices** |
|  |  |
|  |  |
|  |  |

Protective Clothing and Equipment Required: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Monitoring Devices Required:

# Job Safety Analysis

Job to be performed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Task breakdown:

**Potential Hazards (List all that apply)**

|  |  |
| --- | --- |
| **Potential Hazards** | **Critical Safety Practices** |
|  |  |
|  |  |
|  |  |

Protective clothing and equipment required: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Monitoring devices required:

Task breakdown:

**Potential Hazards (List all that apply)**

|  |  |
| --- | --- |
| **Potential Hazards** | **Critical Safety Practices** |
|  |  |
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Protective clothing and equipment required: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Monitoring devices required:

# Job Safety Analysis

Job to be performed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Task breakdown:

**Potential Hazards (List all that apply)**

|  |  |
| --- | --- |
| **Potential Hazards** | **Critical Safety Practices** |
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|  |  |

Protective clothing and equipment required: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Monitoring devices required:

Task breakdown:

**Potential Hazards (List all that apply)**

|  |  |
| --- | --- |
| **Potential Hazards** | **Critical Safety Practices** |
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Protective clothing and equipment required: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Monitoring devices required:

# Standard Operating Procedure for Product Transfers

**Procedure**

1. The shipper/manufacturer must be notified of the railroad’s decision concerning transfer of product from one container to others.
2. The product must be identified and the chemical/physical properties reviewed before beginning any transfer activity.
3. The appropriate specification receiving container(s) must be identified/located and ordered.
4. A site safety plan must be prepared and reviewed before any operations begin. This includes zones, protective clothing, evacuation, nearest qualified hospital, etc.
5. Weather conditions such as temperature, humidity, wind direction and speed must be noted and taken into account in order to protect against exposure. Certain weather conditions would dictate postponement of transfer (i.e., lightning, high winds).
6. The general area surrounding the transfer site must have controlled access, allowing only essential authorized personnel into the area.
7. Conduct a job/safety briefing with all involved parties to establish understanding and job assignments.
8. Secure all containers before beginning any work on, under or around them. Apply appropriate blue flag, derail and switch lock protection. If containers are on wheels set all brakes, chock against movement in all directions. If containers are on the ground, crib to prevent movement in all directions.
9. Don the appropriate protective clothing before checking the containers for cleanliness, capacity, and specification.
10. Inspect all hoses, fittings, connections, pumps, and compressors for correct materials of construction, integrity, pressure rating, and cleanliness. Be sure all gaskets and “O” rings are of the proper construction material.
11. Establish a ground field and check for Ohms resistance. The ground field should be placed uphill, upwind and away from the activity area (e.g., where the hoses, connections and pumps are to be placed). Ground cables should be made of braided stainless steel or copper. The clamps should be positive closure, as a “C” clamp with a pointed end to penetrate old paint, dirt, etc.
12. Attach grounding cables to the damaged container first. The cables must be connected to a surface that is attached to the tank itself. Body bolsters are welded directly to the tank. Newer tank cars may have grounding lugs. The surface must be clean to ensure good electrical contact. After attachment to the car, attach the cable to the grounding field. Follow the same procedure to connect the receiving container to the grounding field. Upon completion of the grounding process, the two containers must be bonded together. (Relaxation time for some products is extremely long. Check with the manufacturer before proceeding.) Pumps and compressors should also be grounded.
13. Plan the connections before beginning the assembly. This will prevent having unnecessary turnarounds in the system.
14. Record the pressure of the containers.
15. Make all connections, checking for gaskets or “O” rings. A block valve should be installed near the connection for the receiving vehicle, especially if multiple vehicles are needed.
16. Provide a means to purge the system before and after the transfer. Use of an inert gas such as nitrogen is recommended in most cases. Check for leaks in the system before flowing product. Certain products require air exclusion, but by use of inert gas, this situation is solved. Suggested pressure of the inert gas is approximately 10% higher than the pressure of the material being transferred.
17. All connections should have drip protection such as an absorbent pad or catch basin to prevent loss of product onto the ground from a leaking fitting. At this time remote shut-off valves are not required in the United States, however, it is advisable to use them if available. All hoses should be tied off to prevent tension from their own weight.
18. Conduct a job/safety briefing before continuing with the transfer. Ascertain that all involved are aware of the task(s) at hand before proceeding.
19. Open valves in the predetermined order. Usually, the product valves on the damaged container will be partially opened first to allow the system to fill with product, and then the product valve on the receiving container will be partially opened to allow the flow to continue. If transferring flammable gases, the product valves must be completely open on the container being transferred to assure operation of the excess flow check valves. Most transfers can proceed in the same fashion as flammable gases. Slowly continue to open the liquid valves on the car being transferred until they are completely open. Control the rate of flow using the receiving vessel’s liquid valve. If the system is a closed system, slowly open the vapor line on the receiving vessel, then the damaged vessel. Depending on the damage, the pressure should not exceed the starting pressure on the damaged car. The pressure of the containers must be monitored constantly in order to maintain a positive flow of product to the receiving container. Ideally, the pressure of the receiving container should be approximately 5 – 10 psi less than the donating one. Control the flow throughout the transfer procedure.
20. Continue to monitor progress. Personnel should be stationed at strategic points, such as the containers, the pump, and the power unit driving the transfer equipment. An indication of completion will be the pump/compressor running much faster, or, if a sight glass is used, there will be no liquid flowing through it.
21. When the transfer is completed, the transfer equipment should be shut down, the valves closed and a purge system attached to clear the lines of remaining product. This can usually be accomplished by using an inert gas such as nitrogen. Charge the product line through the purge valves to approximately 10% greater pressure than was exhibited during the transfer. When the line is completely pressured, open the product valve on the receiving car quickly and allow the pressure to dissipate. Close the product line and allow the pressure to build again. Repeat the procedure at least four times. After the last purge, bleed the pressure remaining in the system into the receiving container. Close the product valve.
22. Before disassembly of the system, re-check all product valves on both containers, and bleed any remaining pressure from the vapor side of the operation.
23. After assurance of all valves being closed, disassemble the lines, pumps, and the purge system.
24. Replace all plugs, caps, etc., on all containers and check for proper placarding before release for transportation.
25. Remove the grounding and bonding systems from the containers.
26. Prepare or check shipping documents for the containers.
27. Properly secure the hoses and other equipment used in the transfer and dispose of any contaminated clothing, absorbent pads/booms in accordance with the waste disposal process protocols of state or federal regulations.
28. Return operations to normal.

# Appendices

Attach additional information here.

Information for appendix may include:

* Material safety data sheets
* Product transfer plan
* Spill containment plan
* Air monitoring plan
* Confined space entry plan
* Task-specific job safety analysis (JSA)