



Canadian Fuels
ASSOCIATION
canadienne des carburants

**LAND TRANSPORTATION
EMERGENCY RESPONSE
GUIDELINE**
For
PETROLEUM SPILLS

August 2020

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INTRODUCTION & BACKGROUND

Under the sponsorship of the Canadian Fuels Association, the Land Spill Emergency Preparedness Program was developed as a guideline for transportation emergency response to land-based petroleum spills. This work was undertaken to establish and document contemporary practices for responsible management of petroleum land transportation spills, to encourage consistent approaches, and to promote improved response capability and management. The guideline is underpinned by the Canadian Fuels Association Environment, Health and Safety Guiding Principle #3.

This guideline outlines scope, emergency response code of practice, response time guidelines, response equipment and personnel capability requirements. In preparing the guideline, the task group has made reference to recognized published emergency response standards and industry codes of practice where applicable.

The guideline was prepared with the following objectives in mind:

- Define and ensure response capability to consistently meet Canadian Fuels Association Environment, Health and Safety Guiding Principle #3
- Provide a basis for continuous improvement
- Facilitate integration of plans and cost sharing with other stakeholders
- Provide a consistent set of expectations as members shift toward increased reliance on contracted transportation and response

Developing and implementing this guideline is intended to improve land spill response management and to enhance due diligence of parties engaged in the transportation of petroleum products.

Assurance of conformance to the guideline remains the responsibility of the Canadian Fuels member companies, either individually or collectively, as a participant in a mutual aid arrangement. Each Canadian Fuels member company confirms that it is following the guideline by signing its annual representation letter covering the Canadian Fuels Association EH&S Guiding Principles.

This guideline has been reviewed by the National Distribution Committee of the Canadian Fuels Association.

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DEFINITIONS

Auto Ignition Temperature - The temperature of a volatile petroleum substance at which the vapours created will ignite in the presence of sufficient air without any other ignition source.

CANUTEC - The Canadian Transportation Emergency Centre operated by Transport Canada. CANUTEC provides emergency response information and assistance in contacting the shipper on a 24-hour basis.

Cold Zone – The control zone of a HAZMAT incident that contains the command post and other support functions as are deemed necessary to control the incident. This zone may also be referred to as the clean zone or the support zone.

Competent– having the skill and knowledge to consistently perform specific work activities according to predefined standards and the ability to apply skills and knowledge in a specific work environment.

Control Zones - The areas at a petroleum spill scene that are designated based on safety and the degree of hazard. For the purpose of this document, these zones are defined as hot, warm and cold zones (see hot zone).

Emergency - A sudden and unexpected event calling for immediate action.

Emergency Response (ER) - Is that portion of incident management in which personnel are involved in defensively or offensively controlling an incident. The activities of the response portion include analyzing the incident, planning the response, implementing the planned response and evaluating progress.

Fire Point - The temperature of a volatile petroleum substance at which sufficient vapour is present to sustain combustion in the presence of sufficient air and an ignition source.

Flash Point - The temperature of a volatile petroleum substance at which sufficient vapour is present to initiate combustion in the presence of sufficient air and an ignition source.

Hazard - An abnormal state associated with the loading or truck transportation, or unloading of petroleum that is capable of posing an unreasonable risk to health, safety or the environment.

Hot Zone - The control zone immediately surrounding a petroleum spill incident, which extends far enough to prevent adverse effects from releases of the petroleum substance to personnel outside the zone.

Incident - An emergency involving the release or potential release of a petroleum substance with or without a fire.

DEFINITIONS

Incident Commander (IC) - The person responsible for all decisions relating to the management of the incident. The Incident Commander is in charge of the incident site.

Incident Command System (ICS) - An organized system of roles, responsibilities, and standard operating procedures used to manage and direct emergency operations.

Initial Response Time - The amount of time required by a responder to initiate (by telephone) support in analyzing the incident and planning the initial response, after being advised of an incident.

Major Metropolitan Areas - Geographic areas in Canada with large population densities, requiring on-site response time of two hours or less for petroleum spills. (All major metropolitan areas in Canada are defined in Appendix E).

Safety Data Sheet (SDS) - A document provided by manufacturers containing information about chemical composition, physical and chemical properties, health and safety hazards, emergency response and waste disposal of the material.

On-Site Response Time - The amount of time specified, from the point in time that a responder was notified and understood the need to provide ER assistance, for that responder (under normal conditions of weather and traffic) to have one or more trained knowledgeable individuals at the incident site with appropriate response equipment to support public authorities having jurisdiction in controlling the scene to ensure public safety and minimize environmental damage.

Petroleum - Petroleum substances transported in either bulk or packaged form, as outlined in the Definition of Hazardous Materials in Appendix B. Petroleum includes biofuels which are biologically derived substances including denatured ethanol, vegetable oils, animal fats, or other biomass material intended for use as motive fuels or to be blended with petroleum or biofuel.

PPE – Personal Protective Equipment

Public Authority Having Jurisdiction - Fire and Police departments at the municipal level of government with the regulatory authority to respond to any class of emergency, including petroleum spills. In some jurisdictions, this may as well be a regulatory branch of provincial and/or federal governments.

Readily Available – Response equipment in good working order able to be mobilized without delay and arrive at an incident scene consistent with the Response Times indicated in this guideline.

DEFINITIONS

Responder - Trained personnel involved in controlling an incident. This could be personnel from a Canadian Fuels member company, a transportation company, a contractor specializing in emergency response, and/or an industry mutual-aid cooperative of the above parties able to support public authorities having jurisdiction by providing response capability to contain, recover and clean up petroleum spills.

Response Equipment - Sufficient goods to perform the following response tasks: monitor for flammable atmospheres; protect responders; seal minor puncture leaks; initiate containment and collection of spilled oil; and, transfer product to/from tank trucks. Appendix D provides a list both for general guidance and the reference tool for equipment assessment. Where there are deviations, these must be assessed to determine their acceptability for the specific situation. (i.e. type of commodities, type of transportation, geography). Where other goods have been demonstrated to be functionally equivalent, they may be substituted.

Responsible Party - The person having charge management or control of the petroleum being loaded, transported or unloaded at the time of a transportation incident. This may be the consignor, shipper or in some cases, both parties.

Spill - An accidental or unplanned release of petroleum from either a tank truck or a fixed facility (such as a terminal, retail site, or residential/commercial fuel storage device) while either loading or unloading petroleum to/from the tank truck.

Spill Scene (or Spill Site) - The geographic location of a petroleum transportation incident.

Tank Truck - Vehicle certified for transporting petroleum in bulk on road; includes single-unit, powered vehicles and powered vehicles pulling one or more tank trailers.

Transportation of Dangerous Goods (TDG) - Federal statute defining regulatory requirements associated with the transportation of dangerous goods in Canada.

Warm Zone - The control zone at a HAZMAT (Hazardous Material) incident where personnel and equipment decontamination and hot zone support takes place. It includes the control points for the decontamination corridor, thus helping to reduce the spread of contamination. This zone may also be termed the decontamination zone.

Workplace Hazardous Materials Information System (WHMIS) - Federal statute mandating requirements for providing hazard information and worker training associated with hazardous materials in the workplace.

SCOPE

The scope of this guideline is limited to the following:

- Canadian Fuels member companies and those parties with whom Canadian Fuels member companies have contracted (including agents, hired carriers, associates, response contractors) for some aspect of the loading/unloading and land transportation of petroleum.
- Transportation incidents occurring on either land or inland waterways, associated with the loading, transportation and unloading of petroleum.
- Response capability to manage up to a 70,000 litre tank truck spill.
- Required level of preparedness and response capability in terms of response time, response equipment, and responder capability.
- Definition of response guidelines, not how the guideline is to be implemented nor how individual parties should respond in complying with the guideline.

CODE OF PRACTICE

Each Canadian Fuels member company (and its contracted parties* - agents, associates, hired carriers, response contractors) engaged in petroleum land transportation shall have an up-to-date, operational transportation Emergency Response Plan (ERP) with these eleven elements described:

1. Identifies organization, roles and responsibilities to respond to a petroleum transportation incident.
2. Identifies means of dealing with the hazard, whether to people, environment and property, and describes the measures to contain and clean up the spill.
3. Identifies emergency response resources whether in-house, through a mutual aid plan or from a contractor, to be deployed in the event of a transportation incident.
4. Identifies how technical advice will be provided as to the informational aspects of a petroleum transportation incident including media relations.
5. Identifies the amount and type of specialized equipment and materials required to respond to a transportation incident.
6. Defines responder competency, training, and personnel competency assessment requirements.
7. Describes the assistance offered in training public authorities having jurisdiction along transportation corridors.
8. Describes how the responder will liaise, interface, and cooperate with public authorities having jurisdiction to provide specialized petroleum-related assistance at the spill scene.
9. Describes how evaluation will be conducted with public authorities having jurisdiction of the need for immediate and short-term assistance for persons who are relocated by a spill incident.
10. Identifies how and when the plan will be field tested, audited and updated.
11. Identifies how the key elements of the ERP will be communicated with the public authorities having jurisdiction in order to gain their on-going cooperation and support.

*Note: A Canadian Fuels member company may elect to have its hired carriers and/or response contractors address some or all elements as part of its land transportation ERP.

RESPONSE TIMES

Responders are expected to meet the following response time guidelines in responding to petroleum transportation incidents and spill incidents:

A responder, after being notified of an emergency, is expected to initiate (by telephone) support in analyzing the incident and planning the initial response. This should normally be within 30 minutes after receiving notification, and is referred to as the initial response time.

The responder is expected to have one or more competent responder(s) at the incident site with the appropriate response equipment. This is to support public authorities having jurisdiction in controlling the scene to ensure public safety and minimize environmental damage. It is recognized that response will be progressive, with additional response capability being provided as required. The time required for a responder to have response capability at the incident site is defined as "on-site" response time. On-site response time guidelines are as follows:

Major Metropolitan Areas. This refers to centres with significant population and significant distribution operation. These areas are reviewed periodically to respond to public expectations and are delineated in Appendix E.

- Respond as soon as reasonably possible and be on site, conditions permitting,* within two hours after being informed of, and understanding the need to, provide response assistance.

Additional Contractor Response Time Coverage. Notwithstanding the above certain circumstances may exist whereby the strict definition of metropolitan area is not met nor is the location within 250 kilometres of Canada's southern borders (in support of major metropolitan areas) but it would still be necessary to locate a contractor. Points to consider when assessing the benefits of locating a contractor outside of the above definition should include:

- Nature and size of activities in a centre
- Significant population base
- Important provincial industrial centre
- Commercial centre along major interprovincial highway
- Important petroleum products distribution centre
- The centre is capable of providing the necessary infrastructure to support preparedness

The Funding Committee may designate a centre as requiring a contractor if the centre satisfies any four of the above criteria.

RESPONSE TIMES

All other points within 250 kilometres of Canada's southern border

- Respond as soon as reasonably possible and be on site, conditions permitting, * within six hours after being informed of, and understanding the need to, provide response assistance.

All other points in Canada

- Initiate a response upon being informed of, and understanding the need to, provide response assistance, and be on site as soon as possible considering incident risk and travel time. Here it is expected that the initial response would be initiated with local resources to secure the scene and minimize environmental damage.

* Response times are "conditions permitting" (i.e. weather, road conditions, and exclude any unusual and unforeseen circumstances beyond the control of the responder). From a planning perspective, road travel is based on a rate of 65 km/hr. Note that the safety of responders and the public is the highest priority when responding to an incident.

RESPONSE EQUIPMENT FOR TANK TRUCK SPILLS

Each Canadian Fuels member company (and/or its contracted carriers and responders) will provide in its transportation emergency plan a list of response equipment that will be available to manage up to a 70,000 litre tank truck petroleum transportation incident. The equipment described in the responder's plan must be readily available and in good working order. The list will include the minimum necessary response equipment. **Response equipment used in hazardous areas of the spill site must be appropriately rated for such use (i.e. intrinsically safe or spark proof).**

The following response equipment needs to be available from local sources (i.e. public authorities having jurisdiction, local equipment caches, petroleum terminals, etc.):

- Fire-fighting equipment and PPE
- Spill containment and recovery equipment (vacuum truck, tank truck)
- On-water response equipment (boat, motor, boom, skimmers, etc.)

An example of a response equipment list is provided in Appendix D for general guidance. Functionally equivalent equipment is acceptable - for example, air-powered transfer pumps are acceptable provided these can perform the response function.

RESPONSE PERSONNEL CAPABILITY & TRAINING

Petroleum Spill Response Capability Overview

This section clarifies responsibility and provides guidelines for training industry personnel who respond to land-based petroleum spills.

Health and safety legislation holds the employers responsible for ensuring responders are competent. Competency includes ensuring the responder has the required knowledge and skills, obtained by way of education, training, experience or a combination thereof. Responders who have not demonstrated competency must work under the direct supervision of a competent responder. WHMIS regulations require that all workers understand the risks posed by the substances to which they may be exposed.

Industry standard and best practices now incorporate the Incident Command System (ICS) as a standardized approach to command, control, and coordination of an incident. It is recommended that leaders acquire the levels of ICS 100 and 200 to understand efficiencies and effectiveness in an ICS structure. Training is provided through certified trainers in your area.

Responders to petroleum spills require the capability to analyze an incident, plan a response, implement a planned response, evaluate progress and terminate the response. These actions are to be performed in a manner consistent with an organization's ERP and standard operating procedures.

The skills required to respond vary with the complexity of the incident. Response escalation is progressive with the amount and type of equipment and the number and capability of responders increasing with the size and complexity of the response. Responders must be able to recognize their own limitations and identify situations where additional knowledge or skill is required for a safe resolution of the incident. In these situations, responders must identify additional resources and how they may be contacted as per their documented response plans.

The employer may either provide training internally or use external trainers, but there is no requirement for external training, minimum training hours or external certification. The benefits of cooperative training and simulations involving both private and public responders should however, not be overlooked in designing the overall program to develop and maintain competent responders. Records of training should be maintained.

All responders do not necessarily have to be trained to perform all tasks, but collectively the responders must have the required knowledge and skills. The assignment of responsibility to perform the tasks should be outlined in the response plan and procedures.

Public sector responders are responsible for public safety, including overall management of the incident scene. Their capability to manage a petroleum incident will vary with the level of response and training authorized by the local municipality. For example, a

RESPONSE PERSONNEL CAPABILITY & TRAINING

community with a hazardous material team will be more capable than a community without one. Because of this, the guideline includes optional training for industry responders to assist local authorities with overall incident management. It is the responsibility of each Canadian Fuels member company, its carriers and contractors to ensure its emergency plans and training take the public sector level of capability into consideration.

RESPONSE PERSONNEL CAPABILITY & TRAINING

Training for Drivers who Transport Petroleum (See Appendix C, also refer to the Canadian Fuels Professional Petroleum Drivers Manual, Section 6)

Driver training for response to petroleum spills should include the following elements:

- ❑ **Report the incident in accordance with your ERP. This may include:**
 - Notify public authorities having jurisdiction of an emergency incident.
 - Notify driver's employer of the emergency incident.
 - Understand why you should not leave the incident scene and the importance of obtaining assistance to report the incident to the authorities and your employer.
 - Understand the roles of public authorities having jurisdiction and the response expected from them.

The preceding items require knowledge of who to contact, their daytime and after hours emergency contact numbers, a means of making contact and understanding the information that is to be communicated during the notifications (incident location, nature of emergency, injuries, etc.).

- ❑ **Perform procedures in your ERP for which you have been adequately trained and equipped. As a minimum, this should include:**
 - Analyze the incident and plan an initial response, if safe to do so. Analysis of the incident may include the following:
 - Product identification, hazard description and measures required to protect personnel
 - Container identification, characteristics and operation
 - Estimation of damage to the container and extent of spill
 - Potential losses / exposures resulting from the incident
 - Identification of prioritized response objectives within the capability of the driver
 - Recognition of the need to escalate the response
 - Secure the area by ensuring persons are in a safe location if authorities have not yet arrived on scene.
 - Inform authorities of the response expected from the employer.
 - Understand the requirement for appropriate personal protective equipment (PPE) such as fire-resistant coveralls, gloves, hard hat, safety footwear, safety eyewear and visibility vest and recognize the requirement for more advanced personal protective equipment.
 - Understand the basic fire hazards of petroleum and measures required for removing possible sources of ignition.

RESPONSE PERSONNEL CAPABILITY & TRAINING

Training for Drivers who Transport Petroleum (continued)

- Understand the potential hazard from static electricity and action required for minimizing the hazard.
- Explain the use and limitations of an onboard hand held fire extinguisher.
- Contain (keep material in its container) or confine (keep material in a defined or local area) using spill equipment provided by the employer. Examples include:
 - Stopping the flow of petroleum from the container by operating shut off devices or patching leaks with available materials
 - Blocking off drains, manholes and culverts
 - Constructing dykes and ditches
 - Using sorbent booms to surround the area
 - Using absorbent material
 - Assisting initial responders (fire, police, etc.) and other public authorities having jurisdiction to manage the response and containing the spill until company or contract response personnel arrive.

Drivers should be aware of whom to direct media questions, and refer to their employer or dispatcher for advice if needed.

Emergency Response training provided by employers or included within the Canadian Fuels driver certification process may be adequate to respond to many minor incidents. Drivers, however, must recognize their limitations and must be capable of escalating the response to involve responders trained in the tasks required to handle more complex incidents.

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Advisor

Responders in this category provide information. The level of training is similar to the National Fire Protection Association "First Responder at the Awareness" level training as prescribed in the NFPA 472 standard but it is restricted to the petroleum substances and containers used within the petroleum industry. Responders trained to this level do not enter the Hot or Warm zone at the spill scene. These responders are not part of an organized response team but can assist due to their training, experience and proximity to the spill site. It requires such responders to have the knowledge and skills to safely perform the following duties and tasks:

- **Provide information on the hazards and harmful effects of the involved petroleum substances.**
 - Advise the Incident Commander on the hazards and harmful effects of the spilled petroleum substances handled by his/her organization from the North American Emergency Response Guide and relevant SDS's.
 - Understands the product information available from CANUTEC and demonstrates capability to contact CANUTEC and additional carrier / shipper resources to provide additional hazard information.
 - Finds and understands critical product information contained on relevant SDS's.
 - Assists Incident Commander with documentation and helps to communicate product information to the public.

- **Provide information on the characteristics of the involved tank truck** *(Normally included in companies' operational and Canadian Fuels Driver Certification training).*
 - Advises the Incident Commander of the proper name and model of the cargo tank or other shipping container and the meaning of the various container markings.
 - Identifies additional carrier / shipper resources to provide additional information on the characteristics of the shipping container.

- **Provide information on the potential response options for the products or containers.**
 - Understands the company's internal and government notification and reporting system (not expected to carry out the initial notification and reporting).
 - Understands how an incident management system is implemented at the incident scene (not expected to implement an incident management system).
 - Understands the "[Disciplined Approach to Emergency Response](#)" (not expected to lead the Disciplined Approach process).
 - Understands the organization's plans for dealing with the media and the public (not required to present information to the public or the media).

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Advisor (continued)

- Obtains the following response information for the Incident Commander:
 - Precautions for safe handling, including hygiene practices, protective measures, and procedures for clean up of spills / leaks
 - Applicable control measures including personal protective equipment
 - Emergency and First Aid procedures
 - Additional carrier/shipper resources for obtaining response information
 - Support information to assist the Incident Commander to communicate response options to the public

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Member

This level of training is for personnel who respond to the spill scene as members of an organized response team. This level of training will be sufficient to handle most incidents, but responders must be capable of recognizing situations where additional capability is required and know how to obtain it. These responders can be used to gather and record information, provide technical advice, and provide technical assistance at the incident (including work within the hot zone), consistent with the organization's ERP, standard operating procedures and the local ERP. These responders assist the Team Leader in analyzing the magnitude of the incident, planning the response, implementing the planned response and evaluating results and require the responder to have the knowledge and skills to safely perform the duties and tasks in this section.

This capability is restricted to petroleum substances (see Appendix B) and response procedures for tank truck containers except for an awareness of other hazards of other products that may be encountered at an incident site.

To work within the "Hot Zone", responders should meet the competencies in this section or work under the direct supervision of one who meets these competencies.

□ **Identify the hazards associated with the petroleum products involved**

- Interprets information on the hazards and harmful effects of the involved petroleum substances. Includes demonstrating capability to:
 - given an SDS, identify and interpret physical and chemical characteristics, physical hazards, health hazards, signs and symptoms of exposure, routes of entry, permissible exposure limits, reactivity hazards and environmental concerns
 - predict the potential behaviour / consequences of the petroleum substance based on incident information
 - identify and contact other specialists for assistance in interpreting product hazards
- Interprets information on the characteristics of involved tank truck. Includes demonstrating capability to:
 - identify the purpose and operation of the closures on tank truck
 - describe the potential consequences based on damage found

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Member (continued)

- Provides information on the concentrations of petroleum substances from Lower Explosive Limit and personnel exposure monitoring.
 - identify the appropriate monitoring equipment
 - calibrate, test and use a combustible gas meter and air monitoring equipment
 - advise the concentrations (% LEL - lower explosive limit) of the petroleum substance and implications of that information to the incident

- **Assists the Response Team Leader in planning the response**
 - Provides information on potential response options and consequences for petroleum substances based upon the SDS information. This includes the following:
 - precautions for safe handling of petroleum including elimination of ignition sources, use of spark proof tools, and use of foam to suppress vapours
 - bonding and grounding to eliminate static
 - product containment and transfer options
 - establishment of control zones
 - applicable control measures and personal protective equipment
 - description of the advantages and limitations of potential response options

 - Provides information on personal protective equipment requirements and decontamination methods based upon the SDS information. This includes the following:
 - determining if available personal protective material is appropriate for the petroleum substance (basic personal protective equipment, splash protection equipment, structural fire-fighting equipment and self-contained breathing apparatus - SCBA)
 - identify appropriate decontamination methods

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Member (continued)

- **Implements the planned response as agreed upon with the Incident Commander**
 - Performs assigned tasks consistent with the organization's response plan, standard operating procedures and available personnel tools and equipment. These include the following:
 - use of required PPE in accordance with the safe work plan
 - executing bonding and grounding procedures
 - tank truck containment procedures including repairing leaks on fittings, and patching leaks in the vessel
 - tank truck product removal procedures
 - confinement procedures to keep spilled material in a defined local area. This includes blocking drains, manholes, culverts, constructing dykes and ditches, use of booms and sorbent materials.
 - procedures to recover spilled materials and contaminated materials
 - procedures to dilute, neutralize or disperse the leaking product
 - demonstrating capability to work within the IMS system
 - an understanding of the organization's plans for dealing with media and the public
 - Puts on, works in, and removes personal protective equipment needed to implement the planned response.
 - identify factors that can affect an individual's ability to perform assigned tasks such as heat, cold, confined space, and working in personal protective equipment
 - identify safety considerations for personnel wearing personal protective equipment including the need for a buddy system, back up personnel, symptoms of heat and cold stress, limitations of personnel working in PPE, material degradation, physical and psychological stress, emergency procedures, hand signals, procedures for cleaning, sanitizing and inspecting the equipment.
- **Assists the Response Team Leader to evaluate the results of implementing the planned response by providing feedback on the effectiveness of the response and response documentation**
 - Assesses performance versus the criteria for determining the effectiveness of response operations.
 - Identifies circumstances when it would be prudent to withdraw from the spill site
 - Completes documentation consistent with own ERP and standard operating procedures. These may include (as required):
 - activity logs
 - incident reports
 - hot zone entry and exit logs
 - personal protective equipment logs
 - Scene hazard assessment and safety plan

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Leader

This level of training is for personnel who respond to the spill scene as individuals or leaders of an organized response team. This level of training will be sufficient to handle most incidents, but responders must be capable of recognizing situations where additional capability is required and know how to obtain it. These responders can be used to gather and record information, provide technical advice, and provide technical assistance at the incident (including work within the hot zone), consistent with the organization's ERP, standard operating procedures and the local ERP. These responders assist the Incident Commander in analyzing the magnitude of the incident, planning the response, implementing the planned response and evaluating results and require the responder to have the knowledge and skills to safely perform the duties and tasks in this section.

This capability is restricted to petroleum substances (see Appendix B) and response procedures for tank truck containers except for an awareness of other hazards of other products that may be encountered at an incident site.

- **Assists the Incident Commander in analyzing the magnitude of the incident**
 - Provides and interprets information on the hazards and harmful effects of the involved petroleum substances. Includes demonstrating capability to:
 - given an SDS, identify and interpret physical and chemical characteristics, physical hazards, health hazards, signs and symptoms of exposure, routes of entry, permissible exposure limits, reactivity hazards and environmental concerns
 - predict the potential behaviour / consequences of the petroleum substance based on incident information
 - identify and contact other specialists for assistance in interpreting product hazards
 - Provides and interprets information on the characteristics of involved tank truck. Includes demonstrating capability to:
 - identify the purpose and operation of the closures on tank truck
 - assess damage to tank truck and predict the potential consequences based on damage found
 - assess potential of container failure
 - identify and contact other tank truck specialists

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Leader (continued)

- Provides information on the concentrations of petroleum substances from Lower Explosive Limit and personnel exposure monitoring.
 - identify the appropriate monitoring equipment
 - calibrate, test and use a combustible gas meter and air monitoring equipment
 - advise the concentrations (% LEL - lower explosive limit) of the petroleum substance and implications of that information to the incident

- **Assists the Incident Commander in planning the response**
 - Provides information on potential response options and consequences for petroleum substances based upon the SDS information. This includes the following:
 - precautions for safe handling of petroleum including elimination of ignition sources, use of spark proof tools, and use of foam to suppress vapours
 - bonding and grounding to eliminate static
 - product containment and transfer options
 - establishment of control zones
 - applicable control measures and personal protective equipment
 - emergency first aid procedures (responder required to maintain current first aid certificate)
 - additional sources of information
 - description of the advantages and limitations of potential response options
 - identify resources for repairing containers
 - identify resources for removing the contents of containers
 - identify resources for clean up and disposal of products and containers

 - Provides information on personal protective equipment requirements and decontamination methods based upon the SDS information. This includes the following:
 - identifying the specific material compatible with the product
 - determining if available personal protective material is appropriate for the petroleum substance (basic personal protective equipment, splash protection equipment, structural fire-fighting equipment and self-contained breathing apparatus - SCBA)
 - identify appropriate decontamination methods
 - identify disposal requirements for contaminated equipment
 - identify resources capable of identifying decontamination methods

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Leader (continued)

- Provides information on federal and provincial regulations that relate to handling and secure interim storage of petroleum substances.
 - identify the Federal and Provincial agencies responsible for the regulations pertaining to the handling, transportation and disposal of petroleum and a method of contacting them.
 - identify specialists who are knowledgeable in the regulations.
- Develops a safe work plan specific to the incident, environmental exposures, chemical exposure risks, and physical hazards.
- Develops a plan of action (within the capabilities of available resources) including safety considerations for handling the petroleum substance consistent with the company's ERP and standard operating procedures. This includes the following:
 - the process for developing a plan of action including safety considerations and the processes to execute the plan, given the organization's ERP and standard operating procedures. The incident analysis and plan development should utilize "[A Disciplined Approach to Emergency Response](#)" as a tool to assist in plan development. The scope of the plan is limited to the tasks and procedures associated with the responder's area of expertise.
 - an understanding of the principles of incident management systems (IMS, of which ICS - the Incident Command System is most widely used in North America) and how these relate to plan development.
- **Implements the planned response as agreed upon with the Incident Commander**
 - Performs assigned tasks consistent with the organization's response plan, standard operating procedures and available personnel tools and equipment. These include the following:
 - tank truck containment procedures including repairing leaks on fittings and patching leaks in the vessel.
 - tank truck product removal procedures.
 - confinement procedures to keep spilled material in a defined local area. This includes blocking drains, manholes, culverts, constructing dykes and ditches, use of booms and sorbent materials.
 - use of required PPE in accordance with the safe work plan
 - executing bonding and grounding procedures
 - procedures to recover spilled materials and contaminated materials
 - procedures to dilute, neutralize or disperse the leaking product
 - demonstrating capability to work within the IMS system
 - an understanding of the organization's plans for dealing with media and the public, capability to support the Incident Commander in these interfaces.

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Team Leader (continued)

- Puts on, works in, and removes personal protective equipment needed to implement the planned response.
 - identify factors that can affect an individual's ability to perform assigned tasks such as heat, cold, confined space, and working in personal protective equipment
 - identify safety considerations for personnel wearing personal protective equipment including the need for a buddy system, back up personnel, symptoms of heat and cold stress, limitations of personnel working in PPE, material degradation, physical and psychological stress, emergency procedures, hand signals, procedures for cleaning, sanitizing and inspecting the equipment.
- **Assists the Incident Commander to evaluate the results of implementing the planned response by providing feedback on the effectiveness of the response and response documentation**
 - Identifies the criteria for determining the effectiveness of response operations.
 - Identifies circumstances when it would be prudent to withdraw from the spill site.
 - Terminates response and completes documentation consistent with own ERP and standard operating procedures. These may include (as required):
 - activity logs
 - incident reports
 - hot zone entry and exit logs
 - personal protective equipment logs
 - Participates in a formal debrief of the response to identify areas requiring correction.

RESPONSE PERSONNEL CAPABILITY & TRAINING

Response Coordinator

For some responses a coordinator may be required. The responsibilities include:

- **Ensures the adequacy of the response by the Response Team Leader and Team Members**
 - Assesses the response progress including:
 - adequacy of the safe work plan
 - completeness of the incident plan of action
 - timeliness of the response operations versus expectations of the client and government authorities

- **Provides response support with logistics and offsite communications coordination**
 - Coordinates client input into the response. This may include:
 - coordinating tank truck to support product recovery
 - coordinating the supply of specific additional resources as may be needed to support the response
 - coordinating regular updates with the client from the response team
 - timeliness of the response operations versus expectations of the client and government authority

Responder – Special Function

This level of training is for personnel who respond to the spill scene with either special skills (such as vacuum truck operators) or as general labour to support the response. It is not expected that they would meet any of the competencies described for response team members or leaders. Rather, it is expected that they work under the direct supervision of a competent responder and be instructed in all pertinent details of the safe work plan.

Incident Commander

The Incident Commander is the person responsible for all decisions relating to the management of the spill scene and is in charge of the incident site. Public authorities have the legislative responsibility and authority to be in charge of the spill site and this relationship should be maintained. Where local authorities have not been trained, or do not have experience in responding to petroleum spills, the Response Team Leader may provide assistance to the local authorities.

LIST OF APPENDICES

- A. Canadian Fuels Association Environment, Health and Safety Guiding Principles**

- B. Definition of Hazardous Materials**

- C. Response Scenario Considerations**

- D. Sample Emergency Response Equipment List for Tank Truck**

- E. Major Metropolitan Areas**

- F. Additional References**

APPENDIX 'A'
Canadian Fuels Association
ENVIRONMENT, HEALTH AND SAFETY GUIDING PRINCIPLES

The members of the Canadian Fuels Association are dedicated to continuous efforts to improve the compatibility of our operations and products with the environment while economically supplying high quality products and services to consumers. We recognize our responsibility to work with the public, the government, and others to manufacture and market refined petroleum products in an environmentally sound manner while protecting the health and safety of our employees, our customers and the public. To meet these responsibilities, Canadian Fuels members commit to manage our businesses according to these principles using sound science to prioritize risk and to implement cost-effective management practices.

1. Include safety, health and environmental considerations in our business planning, facilities and product design, operating practices and training programs.
2. Operate our plants and facilities, and handle our raw materials, products and wastes in a manner that protects the environment, and the safety and health of our employees, our neighbours, our customers and the public.
3. Have emergency preparedness capability in place which is integrated with community awareness programs and emergency response plans (ERP).
4. Recognize and respond to community concerns about our raw materials, products and operations.
5. Counsel customers, transporters and others in the use, transportation and disposal of our raw materials, products and waste materials.
6. Promote the efficient utilization of natural resources through energy efficiency in our operations.
7. Extend knowledge by conducting or supporting research on the safety, health and environmental effects of our raw materials, products, processes and waste materials.
8. Improve overall environmental, health and safety performance through continual improvement of management systems.
9. Maintain management systems to ensure compliance with recognized industry standards and regulatory requirements and participate with government and others in creating responsible standards, laws and regulations to safeguard the community, workplace and environment.
10. Promote these principles and practices by sharing experiences and offering assistance to others, who produce, handle, use, transport or dispose of similar raw materials, petroleum products and wastes.

APPENDIX 'B'

DEFINITION OF HAZARDOUS MATERIALS

Hazardous Material means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products (other than petrochemicals which are subject to the provisions of Annex II of the present Marpol 73 / 78 Convention) and, without limiting the generality of the foregoing, includes the substances listed:

LIST OF HAZARDOUS MATERIALS

Asphalt Solutions	Distillates	Naphtha
Blending stocks	Biodiesel blends (B2 – B100)	Solvent
Roofers run residue	Straight run	Heartcut distillate oil
	Flashed feed stocks	
Oils	Gas Oil	Jet Fuels
Clarified	Cracked	JP-1 (Kerosene)
Crude oil		JP-3
Diesel oil	Gasoline Blending Stock	JP-4
Fuel oil No. 4		JP-5 (Kerosene, Heavy)
Fuel oil No. 5	Reformats	
Fuel oil No. 6	Polymer-fuel	Turbo Fuel
Residual fuel oil	Alkylates-fuel	Kerosene
Road oil		Mineral spirit
Transformer oil	Gasolines	
Aromatic oil (excluding vegetable oil)	Casinghead (natural)	Biofuels
Lubricating oils and blending stocks	Automotive	Biomass
Mineral oil	Aviation	Biodiesel 100%
Motor oil	Straight run	Denatured Ethanol
Penetrating oil	Fuel oil No. 1-D	
Spindle oil	Fuel oil No. 2	
Turbine oil	Fuel oil No. 2-D	
	Ethanol blends (E5 – E85)	

The above is a list of commodities for which this guideline applies. For specific information regarding response planning criteria for other commodities (ethanol, other chemicals, LPG's, etc.) manufactured by Canadian Fuels members, please contact the member company.

APPENDIX 'C'

RESPONSE SCENARIO CONSIDERATIONS

This appendix provides a description of typical tank truck incidents and identifies personnel who normally respond to petroleum spill incidents. Used in conjunction with other sections of this guideline, it can assist in response and simulation planning.

Tank Truck Incidents

Tank trucks are the most common transportation mode for delivery of bulk petroleum products. These deliveries normally occur on highways or urban roads where there could be dense population and/or heavy traffic. Most spill incidents of concern are associated with on-road vehicle accidents (i.e. vehicle collisions, overturned or jackknifed tank trucks and trailers). Such incidents have the potential to result in an uncontained product release or risk of vapour ignition resulting in large fires and potential explosions. The primary task of the truck driver is to report the incident to the authorities and their employer, contain the spill (if safely possible), isolate the spilled petroleum from ignition sources, and keep people away from the spill scene. Of particular importance is to prevent the spilled petroleum from entering drainage systems and nearby bodies of water.

Responders to Petroleum Spills

The first personnel normally involved include the truck driver who may be on scene when the incident is detected. Next on the scene are usually the Police, Fire, and Ambulance from the local municipality, responders from the hired carrier, the product owner / shipper and emergency response contractors on behalf of any of these organizations. Government departments may also respond on site.

Response to a small spill or leak may be handled safely and effectively by the truck driver. A large incident can involve a significant number of responders including representatives from numerous government departments. An incident management system, most likely the Incident Command System (ICS), will often be used to provide an organized system of roles and responsibilities to manage resources at a large incident. Command at the incident scene will be assumed by the first arriving Police Officer or Fire Official but may be passed on to more senior responders as the response escalates. Industry responders may be permitted to participate in a "Unified Command" to help manage the overall incident or may fill only specific roles in the response. The public agency IC may limit that agency's participation to control of the scene and surrounding area, leaving the industry responders to manage the operational aspects of the response.

The personnel capability and equipment sections of this guideline provide a more complete description of the required capabilities and equipment to respond to these typical response scenarios.

APPENDIX 'C'

RESPONSE SCENARIO CONSIDERATIONS

Petroleum Incident Response Tasks

The following provides a list of response tasks for a significant petroleum or biofuel tank truck incident to provide context as to how the equipment and training guidelines in this document would apply. They are for planning purposes only and should not be used as a substitute for documented standard operating procedures when responding to an actual incident.

Initial Notification and Response Initiation

- Gather information on location, nature of emergency (products, containers, and injuries).
- Notify public authorities having jurisdiction, the responsible party, and other response organizations as appropriate.
- Select and deploy emergency response personnel to the spill scene.
- Notify spill site, public authorities having jurisdiction, the responsible party and other response organizations of route, method of transport and estimated time of arrival of responders.

Site Management and Control (in co-operation with public responders)

- Establish a command post.
- Position emergency response personnel and equipment in safe locations.
- Secure spill site.
- Establish emergency escape signals and procedures.

Identification of Materials

- Identify and verify products involved.

Evaluation of Hazards and Risks

- Ascertain and evaluate hazards posed by identified materials.

Selection of Personal Protective Equipment (PPE)

- Determine appropriate PPE and establish zones where it is to be used.

Coordination of Information and Resources

- Coordinate information and equipment with the public authorities having jurisdiction, the responsible party and other response organizations.

APPENDIX 'C'

RESPONSE SCENARIO CONSIDERATIONS

Incident Control and Mitigation Tasks

- Measure the concentration of flammable vapour expressed as %LEL (Lower Explosive Limit).
- Equip responders with PPE.
- Apply and re-apply foam appropriate for hydrocarbons when flammable vapour approaches 20 % LEL.
- Shut down truck electrical system.
- Seal storm sewers.
- Seal leaks at dome covers.
- Seal splits and punctures of the tank.
- Contain spill on land and water.

Product Removal and Transfer Operations

- Set up fire protection systems and fire watch.
- Confirm emergency escape procedures.
- Determine the safest method of off-loading.
- Bond and ground the tank truck.
- Safely position receiving tank truck/vacuum truck.
- Remove product via drilled hole (recommended procedure for aluminum tank shells).
- Remove product via unloading lines (risk of significant spill from vents).
- Remove product via vapour recovery lines (risk of significant spill from vents or non-metal connections in VR system).
- Remove product via internal valve (risk of significant spill from vents).
- Remove product via dome cover and hatch cone device (risk of significant spill from seal at dome cover).

Truck Salvage Operations

- Ensure tanks are empty (as reasonably possible).
- Upright overturned tank truck using mobile cranes and/or tow truck.
- Tow or haul away salvaged vehicle to repair/disposal facility.

Spilled Product Recovery

- Use absorbent materials, vacuum pumps, vacuum truck, skimmers, etc. to recover spilled product into portable storage tanks or tank truck.
- Dispose of recovered product and contaminated absorbent materials in a method acceptable to the public authorities having jurisdiction.

APPENDIX 'C'

RESPONSE SCENARIO CONSIDERATIONS

Incident Termination

- Ensure all verbal and written notifications have been completed.
- Conduct a debriefing with focus on lessons learned.
- Thank all participants.
- Leave a contact name for subsequent questions.
- Complete incident reports and documentation.

Clean-Up

- Initiate environmental clean up of soil and water in a method acceptable to the public authorities having jurisdiction.

APPENDIX 'D'
SAMPLE EMERGENCY RESPONSE EQUIPMENT LIST
FOR TANK TRUCK

Essential Equipment Description	Standard
<i>Hazard Recognition Equipment</i>	
Emergency Response Documentation Kit	1
Gas Monitor / Calibration gas / Bump test log	1
Binoculars	1
Flashlights, handheld, UL&CSA, "Safe Hazard"	2
Wind Indicator (wind Sock) with mounted bracket	1
<i>Safety warning equipment:</i>	
Traffic Vests (reflective) CSA approved	4
Traffic cones with reflective tape to meet provincial Standard	6
Barrier Tape "Do Not Enter" tape, 2" x 150 ft.	2
"No Smoking" signs, 12"	3
<i>Safety Equipment</i>	
Wheel chock (Rubber)	2
Fire extinguishers, dry chemical 10 kg	2
First aid kit, 10 persons.	1
Burn kit	1
Eye wash kit	1
Air Horn	1
Fall Protection Harness	2
Extension Ladder (minimum grade 1)	1
Decontamination station	1
<i>Patching kit and container</i>	
Dome Clamps	4
Assortment of wooden plugs Kit	1
Plug n Dyke, 4 L. container or equivalent	1
Overpack salvage drum or bag (45 gal)	1
Portable berm	2
Metal pails with bonding cables	2
Portable storage, minimum 1000 gal.	1
Plastic disposal bags, 5 mm	25
<i>Personal Protective Equipment</i>	
Respirators "Half Mask or Full-Face Mask"	4
Cartridges for Respirators - set	16
Coverall or Clothing, flame retardant / Warm and cold weather	4
Balaclavas Fire retardant	4
Chemical Resistant suits and disposable (Tychem)	8
Rubber boots, CSA approved with static-dissipative	4
Chest Wader, Neoprene, CSA approved	2
Raingear, PVC, FR spec, jacket and pants set	4

APPENDIX 'D'
SAMPLE EMERGENCY RESPONSE EQUIPMENT LIST
FOR TANK TRUCK

Gloves, chemical resistant (compatible with petroleum)	12
Gloves, leather face	12
Head protection (hard hat) - CSA approved, adj. suspension	4
Hearing protection (ear plugs, pair)	12
Safety glasses –clear lens - CSA approved	6
Safety goggles, clear lens – CSA approved	6
Duct Tape (Chem-tape)	2
Personal Flotation Device (PFD), TC Approved	4
<i>Static Electricity Control equipment:</i>	
Earth ground resistance tester / Batteries (Megger)	1
Ohm Meter / Batteries	1
Grounding Rods, 6' or Aluminium grounding Plate	2
Grounding cables, 50' ft. clamps	8
Bag of Salt (Road Salt)	1
<i>Product Transfer Equipment</i>	
Air supply “compressor” 100 psi, 15cfm capacity Min.	1
Air hose	150ft
Air brake glad hand (Supply air to the trailer)	1
Transfer Pumps for Fuel and Flammable Liquids (Diaphragms)	1
Electric Transfer Pump or Spare Pump	1
Repair Kits for Transfer Pumps	1
Product transfer hose	200ft.
Drop tubes (10 ft. aluminum)	2
Ball valve with Camlock (for drop tube)	2
Air Drill	1
Air drill repair kit or Spare Air Drill	1
Hole Saw 2 ½ inch.	2
Hole Saw 3 inch.	2
Pilot Drills for hole saw	4
<i>Camlock Adaptor for 2” pump</i>	
2” Female to 3” Female	1
2” Female to 3’ Male	1
2” Female to 4” Female	1
2” Female to 4’ Male	1
2” Female to 2” Female	1
2” Male to 2 Male	1
<i>Containment and Collection Equipment</i>	
Inland general-purpose river boom or Watergate Barrier	100ft
Sorbent boom, 10 ft. x 5"	12
Sorbent pads, 18"x18"x 3/16", 100 per	5
Universal Sorbent Pads (grey) 18"x18"x 3/16", 100 per	3

APPENDIX 'D'
SAMPLE EMERGENCY RESPONSE EQUIPMENT LIST
FOR TANK TRUCK

Granular Absorbents - Bags	5
Wipe rags, box	1
Trash Pump 2"	1
PVC Lay Flat Discharge hose	50'
Adjustable Fire Nozzle	1
Silt Fence 3ft. High x 100ft or equivalent	1
Plastic pipe, 4", 6 ft. (under Flow Dam)	2
Polypropylene rope, 1/2"	200ft
Neoprene drain stoppers, 48"x48"	4
<i>Site Lighting Equipment:</i>	
Portable lights	4
Portable generator (minimum 2000W)	1
Ground Fault Circuit Interrupter device adaptor (GFI)	1
Electrical cable, (minimum 12/03 grade)	200ft.
Gas can (UL & CSA), 10 litre	1
<i>Hand Tools:</i>	
Non-Sparking hand tool kit	1
Socket sets (1/4,3/8,1/2 drives)	1
Screwdrivers, assortment set	1
Combination wrench set (3/8 to 1 1/4")	1
Drum plug wrench	1
Wrenches, crescent (8"x12")	2
Pipe wrenches (18"x24")	2
Pliers/cutters, 8"	1
Vice grips	2
Hammers	1
Sledge hammer, 8 lb, c/w 26" handle	1
Hack saw, (6) spare blades	1
Chisel, 9"	1
Crowbar	1
Wrecking bar, carpenters, 30"	1
Aluminum shovels	2
Spades, long handled	2
Pitchforks	2
Squeegees	2
Push broom, c/w handle	1
Garden rakes	2
Pick, c/w handle	1
Mattock, 4.5 lb, c/w 36" handle	1
Axe	1
<i>Miscellaneous</i>	
Threaded NPT plugs set (various) 1/4" to 1"	1

APPENDIX 'E'
MAJOR METROPOLITAN AREAS
(and other designated areas where same response time capability will be provided)

Halifax	Montreal	Quebec City
Ottawa	Toronto/Hamilton Area	Winnipeg
Edmonton	Calgary	Grande Prairie
Prince George	Kelowna	Vancouver
Saskatoon	Regina	

The listing of major metropolitan areas is not a comprehensive list of all response centres. The capabilities in these major metropolitan areas and other centres will ensure effective and timely geographic coverage to mitigate the impacts of incidents involving petroleum spills.

APPENDIX 'F'

ADDITIONAL REFERENCES

References to Existing Standards, Legislation and Other Guidelines

1. *Air Monitoring* – CAPP - [Best Management Practices Emergency Air Monitoring](#)
2. *Chemical Protective Clothing* - [NFPA 1500, 472](#)
3. [Critical Incident Stress Management](#) – Correctional Service Canada
4. [CSA Z731](#) Emergency Preparedness and Response
5. *Decontamination* - [OSHA](#) and [NFPA 472](#)
6. *Documenting & Auditing Emergency Response Plans* – [TDG Emergency Response Assistance Plans \(ERAP\)](#)
(Note that ERAPs only apply to Class 3 flammable liquids transported by rail)
7. *Gasoline Tank Truck Emergencies* – [IFSTA](#)
8. *Hazard Communications* - [WHMIS](#)
9. *Incident Command Systems*- [ISFSI](#) (International Society of Fire Service Instructors), [NFPA](#) (Fire Command)
10. [NFPA 472](#), [NFPA 1500](#)
11. *Notification* - [TDG](#), [Fisheries Act](#), [Canada Shipping Act](#), Provincial/Territory Regulations (contact provincial/territorial Ministry of Environment or equivalent)
12. [OSHA Hazardous Waste Operations and Emergency Response](#) – 1910.120
13. *Product & Container Specifics* - [CSA](#), [DOT](#), [Canadian Trucking Alliance](#)
14. *Respiratory Protection* - [CSA Guidelines for the Selection, Care, and Use of Respirators](#)
15. *Team Safety* - [NFPA 472](#)

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