



# Safety Advisory

## Presence of Hydrogen Sulfide in Crude Oil and proper Petroleum Crude Oil Classification

This Safety Advisory is directed specifically to those who handle crude oil in transport with the aim to raise safety awareness among consignors, carriers and stakeholders who classify, import, handle, offer for transport or transport petroleum crude oil.

### **Presence of hydrogen Sulfide in Crude Oil**

While First Responders should be aware of the risks, hydrogen sulfide (H<sub>2</sub>S) in low concentration should dissipate rapidly when a means of containment is breached in an open and ventilated area, which greatly reduces their risk of exposure to this toxic gas. However, since hydrogen sulfide is slightly heavier than air, it will tend to stay low to the ground and may accumulate where the ground is lower.

Additional precautions should always be taken in closed or confined areas.

### **Petroleum Crude Oil Test Methods**

The *Transportation of Dangerous Goods (TDG) Regulations* do not specify which test method to use, and the UN Recommendations provide a list of suggested test methods. These are simply suggestions and do not specify the scope of each method.

Although consignors may use ASTM D86-07a, "Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure" to determine the initial boiling point of some refined petroleum products, its scope\* makes it unsuitable for determining the initial boiling point of petroleum crude oils containing volatile components such as methane, ethane, propane, and butane.

The consignor must determine the initial boiling point using a suitable test that ensures sample integrity and minimal loss of all volatile components.

For reference, please refer to: [ASTM D86-07a](#).



## **Shipping Names selection and the Importance of Proper Classification**

Part 2 of the *Transportation of Dangerous Goods (TDG) Regulations* requires the consignor (the person who ships or who imports the dangerous goods) to use the shipping name that *most precisely describes* the dangerous goods and that is consistent with the hazards determined by the criteria and tests.

Therefore, identifying the applicable hazards and appropriate shipping name are the first steps to determine the transportation requirements applicable to a product. The dangerous goods list of the TDG Regulations currently provides two shipping names specifically addressing petroleum crude oil, which are: PETROLEUM CRUDE OIL (UN1267) and PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC (UN3494).

While these shipping names may be deemed the most suitable for many crude oil types, ultimately, the most appropriate shipping name should be selected based on the results of classification testing, which may dictate an alternative more suitable shipping name.

The composition of petroleum products can vary greatly, which affects their properties and hazard characteristics that are reflected and communicated through classification. Incorrect classification may lead to applying inappropriate mitigation measures such as selecting an improper means of containment or firefighting approach. Therefore, ensuring proper classification will allow First Responders to have the right information to stay safe when responding to incidents.

For additional information and guidance regarding Classification, please refer to <https://tc.canada.ca/en/dangerous-goods/classification-scheme>, or contact us at [TC.TDGClassification-ClassificationTMD.TC@tc.gc.ca](mailto:TC.TDGClassification-ClassificationTMD.TC@tc.gc.ca).

For additional information regarding the list of Dangerous Goods, please refer to <https://tc.canada.ca/en/dangerous-goods/appendix-e-schedule-2-list-dangerous-goods>



## **For more information**

To consult the abstracts of research on Crude oil done by the Transportation of Dangerous Goods

Directorate:

- [Crude Oil Research](#)

To access information on the standards referenced in the TDG Regulations:

- [Part 5.1 of the TDG Regulations \(Interpretation – Crude Oil, Oil and Refined Petroleum Products\)](#)
- **Engineers' web page:** [Technical standards referenced in the Transportation of Dangerous Goods Regulations](#)

Should you have any regulatory questions, please contact the Transportation of Dangerous Goods regional office in your region:

### **Atlantic**

1-866-814-1477

[TDG-TMDAtlantic@tc.gc.ca](mailto:TDG-TMDAtlantic@tc.gc.ca)

### **Quebec**

1-514-633-3400

[TMD-TDG.Quebec@tc.gc.ca](mailto:TMD-TDG.Quebec@tc.gc.ca)

### **Ontario**

1-416-973-1868

[TDG-TMDOntario@tc.gc.ca](mailto:TDG-TMDOntario@tc.gc.ca)

### **Prairie & Northern**

1-888-463-0521

[TDG-TMDPNR@tc.gc.ca](mailto:TDG-TMDPNR@tc.gc.ca)

### **Pacific**

1-604-666-2955

[TDGPacific-TMDPacifique@tc.gc.ca](mailto:TDGPacific-TMDPacifique@tc.gc.ca)

### **National Capital Region**

[tdg-tmd@tc.gc.ca](mailto:tdg-tmd@tc.gc.ca)