



Transportation of Dangerous Goods in Canada: Methanol Air Transport

For projects in remote locations, such as Canada's Far North, transporting samples to the laboratory by air is often the only viable option. Although most preserving agents dispensed in environmental sampling containers are not considered dangerous goods, the transport of methanol by air when using VOC methanol vials requires special considerations.

It is anticipated that within the year methanol preservation for soil VOC will be the required method nationwide. Currently there may be differing views on air shipping requirements. In response, CCIL has prepared this fact sheet to provide our members and their customers' information on safe and successful sampling programs that are in compliance with applicable regulations.

This factsheet is meant to provide a quick summary of these considerations and is not intended to replace the necessary training and certification. The information provided in this document has been prepared with guidance from Transport Canada and a review of industry standards documents. CCIL assumes no liability and recommends to our members that they directly consult TDG regulations or licensed consultants.

Transport Canada regulates the air transport of dangerous goods (TDG) by incorporating the International Civil Aviation Organization Technical Instructions (ICAO TI) (www.icao.int). In addition to the ICAO TI's manual, the industry's technical standards and guidelines are also outlined in the International Air Transport Association (IATA) Dangerous Goods Regulation (DGR) manual (www.iata.org). These standards specify that proper training and certification is required prior to transporting methanol by air.

Since methanol is categorized as a Class 3 – Flammable Liquid, special provisions are enforced when transporting any quantities of pure methanol. The 10 mL volume of methanol that VOC vials contain is, however, a small enough quantity to be considered available to the general public. As such, the transport of methanol vials may be shipped as *Excepted Quantities* (EQ). Dangerous goods shipped under the EQ scenario are exempt from some of the more detailed requirements of the ICAO/IATA TDG regulations (e.g., documents, labelling, placards, and containment restrictions).

IATA Training Requirements

IATA training is mandatory for anyone packing/shipping any quantity of methanol. Supervision by trained staff of untrained individuals is not permitted.

Airline specific requirements must also be confirmed, as further restrictions are sometimes imposed. Regardless of the airline being certified, the party sending the package is considered the “Shipper” and the Shipper is also responsible for being in compliance with the IATA regulations.

IATA training and certification may be procured through designated third party companies specializing in national and international transportation of dangerous goods and hazardous materials.

Organizations providing dangerous goods training in Canada can be found on Transport Canada's website: <http://wwwapps.tc.gc.ca/saf-sec-sur/3/train-form/search-eng.aspx>. Alternatively, the services of a third party consultant can be employed to assist and offer guidance with processing DGs for transport.

Volume and Weight Limitations

According to the IATA standards for EQ, each package must not exceed a net volume of 500 mL of methanol. This means that each package (cooler) cannot contain more than 50 VOC vials (assuming 10 mL of methanol/vial). The inner means of containment (i.e. vials or bottles) may not hold more than 30 mL of methanol. There is no limit to the number of separate packages that can be included per shipment, other than the provisions for the aircraft’s carrying capacity.

Although VOC vials may contain approximately 5 to 10 g of soil sample, the contents of these vials may not be declassified as non-dangerous goods. According to Transport Canada, this classification is based on the solution’s flashpoint (<60°C for Class 3 – Flammable Liquids). Studies have shown that the methanol in VOC vials containing 5 to 10 g soil still has a flashpoint well below the 60°C limit.

As such, when shipping methanol vials back to the laboratory, the volume of the soil core must be considered when establishing the total volume of the package. This means that no more than 500 mL total, soil plus methanol (35 vials, assuming 5g soil, density 1.2g/mL) may be shipped in one package.

Packaging Requirements & Applicable Documentation

Packaging must meet IATA requirements, including drop tests. Each outer package (ie. cooler) must have an *Excepted Quantities (EQ)* label that lists the class of the dangerous good (i.e. **Class 3** for methanol). Unless listed elsewhere, the consignor and consignees (sending and receiving parties) name and address must also be placed on the package, in the label area. The packaging must contain sufficient absorbent material to mitigate potential spillage of the entire volume of methanol being shipped. This absorbent material may also act as cushioning material.

A Shipper Declaration is not required; however a Bill of Landing or Air Waybill must be included and must contain the following statement: “Dangerous Goods in Excepted Quantities”.

Below is a quick list of key steps for proper packaging of methanol preserved samples, prior to return shipment.

1. The return packer / shipper must be IATA trained for air shipment of Methanol as ***Exempted Quantities***
2. Seal the vials securely and ensure the cap threads are clean (methanol evaporates very easily)
3. It is recommended that the sender use the cooler, packaging and sorbent materials in which the vials were originally shipped (this ensures compliance with the IATA requirements)
4. Place vials in the cardboard box that they come in, and place the box in the Ziploc bag provided
5. Add ice to the cooler in a separate Ziploc bag and fill voids with bubble wrap
6. Non-hazardous materials (i.e. small soil jars for moisture content) may be added to the cooler
7. Other types of hazardous materials that are also permitted under TDG Excepted Quantities rules (e.g. acid preservative vials) may in some circumstances be combined with methanol shipments within the same cooler, but the most stringent requirements for total quantities apply, as per the applicable TDG “alphanumeric code” for Excepted Quantities (i.e. E1 – E5). Contact your laboratory for further guidance.