



Transport
Canada

Transports
Canada

REQUEST FOR INFORMATION (RFI)

Smart Package for Lithium Battery Transportation

No.T8080-200723

Closing Date and Time: April 16, 2021 2:00 pm (EDT)

1. Introduction

The Transportation of Dangerous Goods (TDG) Program develops regulations, provides oversight, and gives expert advice on dangerous goods incidents, to promote public safety in the transportation of dangerous goods by all modes of transport in Canada. One component of the TDG Program is the science and engineering research it conducts to enhance the safety of the transportation of dangerous goods. A research idea currently being considered by the TDG Safety Research and Analysis branch involves improving the safety of transporting lithium batteries through the development of a “smart package”, which would indicate a warning about an issue inside the package and could result in the package being removed from the transportation chain before posing a safety risk.

The purpose of this Request for Information (RFI) is to obtain information about existing technologies that are currently in use, or potential ideas and technologies to consider, which could be used to monitor the conditions that may indicate that a thermal runaway reaction is imminent or probable while lithium batteries are in transport.

2. Background

Every year, large quantities of lithium batteries are shipped around the world. There are various potential hazards related to lithium batteries in transport, including gas venting, smoke, thermal runaway, rupture, fire, and explosion. If the batteries are damaged or mishandled or have manufacturing defects, the cells might start to self-heat, and if the dissipation of heat is less than the generation of heat, heat accumulates and a fire may start. The rate of self-heating can vary greatly, so there is no way to accurately predict the occurrence of a fire.

Several incidents have occurred involving lithium batteries in transport. As the use of lithium batteries increases, the potential for the number of incidents involving lithium batteries also increases. To mitigate these risks, a research idea was proposed at Transport Canada’s TDG Research Symposium in 2019 (<https://tc.canada.ca/en/dangerous-goods/transportation-dangerous-goods-research-symposium>) to create a smart package that could detect if a potential safety issue is occurring or has occurred inside a package containing lithium batteries, in order to provide a warning before the package proceeds further in the transport chain (e.g. before being loaded onto an aircraft or a truck). A smart package would not address concerns related to undeclared packages. However, if it is economical, perhaps shippers may choose to apply such a technology to some packages that they accept for transport even if not declared to contain lithium batteries.

There are technologies and tools that are already in use that provide valuable physical and chemical property information about goods in packages. Their applicability may possibly be extended to lithium battery transport. For example, there are existing technologies that can monitor humidity, temperature, shocks or aspects of products and devices while in use or in transport. The TDG Program is looking for information on existing technologies, or ideas on potential new applications or new technologies, that could be incorporated into packages for transporting lithium batteries to indicate a warning about a safety issue inside the package while it is being handled or offered for transport or during transport.

3. Instructions to the Respondents

- a) This document is not a bid solicitation. This RFI will not result in the award of any contract. As a result, potential respondents of any goods or services described in this RFI should not reserve stock or facilities, nor allocate resources as a result of any information contained in this RFI, nor will this RFI result in the creation of any source list. Therefore, whether or not any potential respondent responds to this RFI will not preclude that respondent from participating in any future procurement.
- b) Also, the procurement of any of the goods or services described in this RFI will not necessarily follow this RFI. This RFI is simply intended to solicit feedback from industry with respect to the matters described in this RFI. The Government of Canada will not reimburse any respondent for expenses incurred in responding to this RFI.
- c) Respondents should mark any portions of their response that they consider proprietary or confidential. The Government of Canada will handle the responses in accordance with the Access to Information Act.
- d) The Government of Canada will review all responses received by the RFI closing date although responses will not be formally evaluated. The Government of Canada may, in its discretion, review responses received after the RFI closing date. A review team composed of representatives of Transport Canada (TC) will review the responses.
- e) The Government of Canada reserves the right to hire any independent consultant or use any government resources that it considers necessary to review any response. Not all members of the review team will necessarily review all responses.
- f) The Government of Canada may, in its discretion, hold a single Post-Submission Review Meeting with all interested vendors or request individual Post-Submission Review Meetings with selected respondents, to provide clarity on information provided or to invite a presentation about some or all of the proposed solutions. If required, these will be held at the most appropriate location, to be determined at a later date. The intent of these meetings will be to provide an opportunity for a face-to-face discussion with respondents. Although respondents may request a meeting, and their request will be considered, the Government of Canada will determine whether or not it requires additional information from any given respondent and will schedule meetings accordingly. All such requests, by respondents, should be forwarded to the Contracting Authority identified herein.

4. Format of Responses Requested

a) Respondents are requested to submit one soft copy of their response in Portable Document Format (PDF), and should include:

- I. Title Page: The first page should be the title page, which should contain the:
 - title of the respondent's response;
 - name, address and telephone number of the respondent;
 - date; and
 - RFI number.

If sending multiple documents, please number the documents accordingly with a title page for each document.

5. Information Requested

Please reply to questions as you see fit.

1. Please briefly describe your company or organization, and the nature of work it conducts or services it provides.
2. Do you have an idea for a "smart package" (as described in the "Introduction" and "Background" sections above)? Do you know of existing or potential technologies that may be applicable to monitoring an attribute(s) or potential hazard(s) of lithium batteries? Please describe the idea(s) and/or technology(ies).
3. Do you ship or transport lithium batteries? If yes, do you currently have a way of monitoring the lithium batteries while they are in transport? What attribute(s) do you monitor and how?
4. If you ship or transport other products, do you currently monitor those products while in transport? If yes, please explain how your method(s) or technology could be applied to developing a smart package for lithium batteries.
5. Do you monitor devices containing lithium batteries for malfunction of the battery while in use? If yes, what attribute(s) do you monitor and how?

6. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 5 calendar days before the RFI closing date at natasha.blackstein@tc.gc.ca. Enquiries received after that time may not be answered.

Responders should reference as accurately as possible the numbered item of the RFI to which the enquiry relates. Care should be taken by Responders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all Responders.

7. Submission of Responses

Responses to this RFI must be submitted to the Contracting Authority Natasha.blackstein@tc.gc.ca by the date and time indicated on page 1 of this request for information document.