

Anhydrous Ammonia Storage and Distribution Guide

IP-2010-03-002

The Boiler and Pressure Vessel Act, 1999 and *The Boiler and Pressure Vessel Regulations* describe requirements for anhydrous ammonia fertilizer storage and distribution plants constructed after Dec. 31, 2006. The Regulations, Paragraph 119 (1), also reference the standard *American National Standards Institute ANSI K61.1-1999/Compressed Gas Association CGA G-2.1 Safety Requirements for the Storage and Handling of Anhydrous Ammonia* (except Sections 7 through 12) which applies in addition to the legislation.

The Boiler and Pressure Vessel Act and the *Regulations* referenced in this document can be obtained from the website www.gp.gov.sk.ca while forms are available at www.tsask.ca. American National Standards Institute K61.1/CGA C-2.1 can be purchased from various sources such as technical book stores or online suppliers or may be available in some libraries.

In this document “owner” means the person or company who owns or leases the plant and/or who will be storing and distributing anhydrous ammonia at the plant. “Contractor” means a person or organization who holds a contractor’s licence under the *Regulations* and who has qualified for the licence by holding a certificate for a quality control program. “Plant” means the assembly of items located on the site used in the storage and dispensing of anhydrous ammonia fertilizer. “Site” means the parcel of land on which the plant will be located.

Where submission of forms, documents or fees is required, submission shall be to the address on the letterhead of the form. Forms are to be completed in their entirety as described on the form and certified. Submission may be made by the person or organization stated in the procedures below or by a person or organization on their behalf.

Before a plant can be licensed to store and dispense anhydrous ammonia it must comply with Part VI of the *Regulations*. Also, as stated in Paragraph 123 (8) of the *Regulations*, the owner is cautioned that other government departments, agencies or the municipality may impose additional requirements which are outside the scope of the requirements described in this document and the *Regulations*. Concerns such as business licences, land subdivision, registration of title or lease, environmental regulations, etc. may be applicable and further information should be obtained from the municipality.

As described in Part VI of the *Regulations*, the owner of an anhydrous ammonia storage and distribution site shall make sure that any pressure vessels, pressure piping and fittings used in an anhydrous ammonia storage and distribution plant to the extent that they are not covered in Part VI, shall comply with the requirements set out in Part II. The location of the plant must be taken into consideration. Depending on the overall capacity of the storage vessel(s) certain limitations are made with regards to the boundaries of a city, town, village, resort, etc. Tables referenced within the *Regulations* also give guidance on the limitations for the appropriate distance from a railroad track and any building, other than a building that forms part of an anhydrous ammonia storage and distribution plant. This section of the regulations also describes the protection of the site by means of a chain link fence and posted signs.

As described in the steps to follow, an application for a permit to construct the site must be made to our branch. It is important to include with the application, two copies of drawings for the proposed plant.

Although these drawings do not need to be drafted and designed by an engineering consulting firm (which is the preferred method), they do need to have some basic information. They shall include the name of the applicant, correct land surveyor description (LSD) for the site, location of near by buildings, distances between vessels and other structures on the site, location of railway right of ways, property lines, fences, pipelines, roads, etc. The drawing shall include a “Notes” or “Legend” area which describes the size and storage capacity of the plant, a description of the motive power used, a statement that the design of the storage vessels meet the requirements of the Provincial Regulations, and if served by rail, a statement as to whether the rail is owned privately or by a railway company. (Note: This was only a brief description of what is laid out in the *Regulations*; the owner should review Part VI to completely understand each requirement.)

Procedure for Permitting and Licensing a New Anhydrous Ammonia Plant

The procedure to obtain the licence will generally follow these steps:

- 1) The owner is to submit Form [LIB-0010](#) *Application for Permit to Construct an Anhydrous Ammonia Storage and Distribution Plant* along with the permit fee and two copies of drawings of the proposed plant. Permit fees are listed in the *Regulations*, Paragraph 123 (2) (b) and on the form while drawings are to comply with the *Regulations*, Paragraph 123 (3).
- 2) The contractor who will be installing the storage pressure vessel (or vessels) is to submit Form [LIB-0001](#) *Installation or Repair/Alteration Permit* along with the permit fee and Manufacturer’s Data Report for each storage pressure vessel intended for the plant. Permit fees for installation can be found as an attachment to Form **LIB-0001** or in Table 6 of the *Regulations* and are based on the vessel multiple as defined in Paragraph 2 (x) in the *Regulations*.
- 3) The owner is to submit Form [LIB-0002](#) *Application for a Licence to Operate* along with the licence fee for each storage pressure vessel in the plant. The licence fees and calculation of same are similar to (2) above except that the fees are an attachment to Form **LIB-0002** or in Table 8 of the *Regulations*. A Licence to Operate each vessel expires on June 30 each year and is to be renewed annually. For vessel installations where operation will be begin after Dec. 31st but before July 1st of a given year, the licence fee is one half of that shown in Table 8.
- 4) The owner is to submit Form [LIB-0011](#) *Application for a Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant* along with the licence fee for the type and class of plant, storage capacity and the duration of the licence. The licence fees are given in Table 14 of the *Regulations* and are also stated on the application form.
- 5) An Inspector will be assigned to visit the site to verify that it conforms to the information submitted with the *Application for Permit to Construct an Anhydrous Ammonia Storage and Distribution Plant* and that the site will be acceptable for the construction of an anhydrous ammonia storage and distribution plant. The *Inspector* will report the findings and, if it is found the site is not in compliance with the documentation and the *Regulations*, such findings will be communicated to the owner in writing and in a timely manner. Should the findings require an additional inspection after the corrections have been made, an assigned *Inspector* will perform a second inspection at the site to verify acceptance. The permit to construct the site will be issued upon the acceptance

of the initial site visit by the *Inspector*. Every inspection except for the final inspection described in (6) below is subject to fees as described in the *Regulations*, Paragraph 124 (3).

- 6) A final inspection of the plant will be carried out by an assigned *Inspector* once the site construction is finished and all requirements for the plant have been installed. The final inspection will include an acceptance inspection of the storage vessel(s). Also, a checklist (refer to Page 2 of Form **LIB-0010**) will be used by the *Inspector* to verify that the plant is in compliance and is acceptable for storing and distributing anhydrous ammonia.
- 7) The owner will be issued a *Licence to Operate* each storage pressure vessel and a *Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant*.
- 8) All attempts will be made to expedite the above process provided all permit and licence applications and associated fees have been submitted. After the final inspection in (6) above is completed and the plant is found to be satisfactory, the owner may request permission to operate the plant although the licences described in (7) above may not have been issued.
- 9) As noted in (3) above, the *Licence to Operate* for each pressure vessel in the plant is to be renewed annually. The *Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant* described in (4) above is to be renewed annually or every five years depending on the type and class of plant and the duration of licence selected by the owner on Form **LIB-0011**.

Requirements for In-service Anhydrous Ammonia Plants

Pressure vessels and related pressure piping that are used in the handling and storage of anhydrous ammonia shall be designed, constructed, installed, and operated in accordance with the CSA B51 code and the ANSI K- 61.1-1999/CGA G- 2.1 Safety Requirements for the Storage and Handling of Anhydrous Ammonia.

The Boiler and Pressure Vessel Act put the responsibility on the owner. The owner is required to operate the anhydrous ammonia storage and distribution plant only when every vessel in the plant has a valid Licence to Operate. The Licence to Operate each vessel expires on June 30 each year and is to be validated yearly. The renewal notice for the Licence to Operate is mailed to the owner at end of April/beginning of May each year.

Pressure Vessels used for the storage of anhydrous ammonia must be designed for a pressure of not less than 1725 kilopascals. Every owner of a pressure vessel that is in use or operation shall ensure that the pressure vessel is inspected every 5 years. No person shall use or operate a pressure vessel unless there is a valid inspection certificate for that pressure vessel. Every owner of an Anhydrous Ammonia Storage and Distribution Plant shall ensure that the plant has a valid Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant. Licences last for either 1 year or 5 years and will always expire on Dec. 31st.

The owner is also responsible to inform the Boiler and Pressure Vessel Safety Branch of any planned additions or changes to the plant and/or plans of new ownership, site retirement, or relocation of the plant. Legal action can result in the lack of due diligence and accountability of an owner with regards to

the status of an anhydrous plant in the event of a disaster. Please use the form [LIB-0013](#) *Anhydrous Ammonia Status Update* to inform the branch of upcoming changes to the plant.

Anhydrous ammonia storage tanks should have internal non-destructive examinations (wet fluorescent magnetic particle testing) done on the heat affected zones and welds of the welded seams at a minimum of once every 10 years. Since external inspections on the tanks are performed every 5 years by our branch, it is at the request of our office that these inspections intervals are coinciding with the 10 year internal inspections. Please use the form [LIB-0013](#) *Anhydrous Ammonia Status Update* to inform the branch of planned internal examination so that we may arrange to be at the site location to witness the internal NDE testing and to perform a visual internal inspection. It may come at the request of an inspector that the frequency of the internal examination be performed once ever 5 years, depending on the most recent NDE results. It is requested that copies of the internal examination report be forwarded to our office for inclusion with our file.

As described in section H.4.3 (f) 'Servicing intervals' of the 'Canadian Standards Association B51-09, Part 1, Annex H – *Overpressure protection devices*', pressure vessels in anhydrous ammonia service shall have the pressure-relief valves serviced every five years. The servicing of the pressure-relief valves may or may not fall on the inspection interval with our branch, however, it is requested that copies of the pressure-relief valve service report be forwarded to our office for inclusion with the file. Please use the form [LIB-0013](#) *Anhydrous Ammonia Status Update* for submission of the service report.

Frequently Asked Questions (FAQ)

- Q:** The tank, or tanks, that form part of the plant have a valid Licence to Operate that was renewed in June, why do I need a second licence?
- A:** The licence to operate the vessel, which is renewed annually, allows for the tank to be legally operated in the province. To be able to legally distribute anhydrous ammonia, a separate licence is required to operate an anhydrous storage and distribution plant. The plant may contain one or more storage vessels, but only one licence is needed for the plant to store and distribute above what is required for each vessel to be legally operated.
- Q:** I am not sure of the exact LSD location for the plant, what do I do?
- A:** Check with the local municipality to get the correct land surveyor description (LSD). Make sure the correct LSD is shown on the drawings which are to be submitted with the form [LIB-0010](#) *Application for Permit to Construct an Anhydrous Ammonia Storage and Distribution Plant*.
- Q:** We are leasing the tank from another company, who is responsible for the licensing of the vessels and the storage and distribution site?
- A:** The person distributing the product is responsible for purchasing the licence to operate the anhydrous storage and distribution plant. The owner of the vessel(s) is responsible for purchasing the licence to operate the vessel(s).

- Q:** We are adding a new tank to our existing licensed site to increase the capacity of the plant, how do we proceed?
- A:** A new application should be made for the Installation Permit and Licence to Operate the individual vessel that will be added to the site, using the form **LIB-0001** *Installation or Repair/Alteration Permit* and **LIB-0002** *Application for a Licence to Operate*. The form **LIB-0010** *Application for Permit to Construct an Anhydrous Ammonia Storage and Distribution Plant* shall also be submitted with two new drawings for the site. They shall be updated to show the new location of the vessel with regards to the other vessel(s) and associated buildings, as well the plant capacity needs to be updated in the "Notes" or "Legend" area. Form **LIB-0013** *Anhydrous Ammonia Status Update* should be included with the permit application to indicate the addition of the second tank. Lastly a new application needs to be made using form **LIB-0011** *Application for a Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant* along with the difference in the licence fee for the type and class of plant, storage capacity and the duration of the licence only.
- Q:** We are retiring or moving the site and no longer going to be storing or distributing from the registered location, how do we proceed?
- A:** We have a newly developed form to use for updating the status of a plant. (Form **LIB-0013** *Anhydrous Ammonia Status Update*) On the form you can indicate the status, i.e. retired/moved/new owner, indicate the vessel information, and the date of the status change. Sites that have moved or sites that are under a new owner shall make sure to follow the steps described above for the permit to construct the site and/or for the licence to store and distribute anhydrous ammonia. (Note: it is possible to receive a refund for an Anhydrous Ammonia Storage and Distribution Licence; please refer to our Act and Regulations for further details.)
- Q:** We have an internal NDE examination/testing scheduled for our storage tank at the end of this season, should we be informing the branch of our activities?
- A:** Yes, we would like to have our 5 year external inspection frequencies coincide with the 10 year interval of the internal NDE examination so that the assigned inspector for that area can arrange to be at the site to witness the NDE testing and also perform a visual internal inspection. Please use the form **LIB-0013** *Anhydrous Ammonia Status Update* to indicate the company performing the testing and the date(s) for the internal NDE testing and when the tank will be open and available for internal inspection.
- Q:** We have had our PSV serviced/replaced for our storage bullet, should we be informing the branch of our activities?
- A:** Yes, we would like to have a copy of the PSV service report or proof of the installation of a new safety to include with our files. Please use the form **LIB-0013** *Anhydrous Ammonia Status Update* to indicate the company name of the PSV servicing company and include a copy of the service report, or include with the form proof of new purchase.