

## ANHYDROUS AMMONIA STORAGE AND DISTRIBUTION GUIDE

### Information Paper IP-2010-03-002

The Saskatchewan Boiler and Pressure Vessel Act and Regulations describe requirements for anhydrous ammonia fertilizer storage and distribution plants constructed after January 01, 2018. The Regulations, Part 12 also reference the standard *Compressed Gas Association CGA G-2.1-2014 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 and all applicable forms can be obtained from our website at [www.tsask.ca](http://www.tsask.ca) CGA G-2.1-2014 can be purchased from various sources such as technical bookstores or online suppliers or may be available in some libraries.

Definitions: “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. A hard copy 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 12 of the Regulations. Also, as stated in Paragraph 160(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 12 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 12, shall comply with the requirements set out in Part 1 of the Regulations. 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 TSASK. It is important to include with the application, an electronic copy of drawings for the proposed plant. Although this drawing does 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 nearby 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 meets 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 12 to completely understand each requirement.)

### **Procedure for Permitting and Licensing a New Anhydrous Ammonia Plant**

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

- 1) The site owner is to submit the following online form: [Application for Permit to Construct an Anhydrous Ammonia Storage and Distribution Plant](#) along with the fee listed on the form and an electronic copy of the drawing for the proposed plant. Drawings are to comply with the Regulations, Paragraph 160 (3).
- 2) The contractor who will be installing the storage pressure vessel (or vessels) is to submit the following online form: [Installation or Repair/Alteration Permit](#) along with the fee listed on the form as well as a copy of the Manufacturer’s Data Report for each storage pressure vessel intended for the plant.
- 3) The site owner is to submit the following online form: *Application for a Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant* along with the fee for a [1 year licence](#) or the fee for a [5 year licence](#).
- 4) 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 site owner 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 (5) below is subject to fees.
- 5) 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 CGA G-2.1-2014 checklist will be used by the Inspector to verify that the plant complies and is acceptable for storing and distributing anhydrous ammonia.
- 6) The vessel owner will receive a temporary 30-day Licence to Operate, after the vessel acceptance is completed, and will then need to follow the instructions/link on the temporary 30-day Licence to make their [Application for the annual Licence to Operate](#) along with paying the associated fee for each storage pressure vessel in the plant. A licence to operate for each vessel expires on June 30 each year and is to be renewed annually.
- 7) The site owner/operator will be issued a *Licence to Operate an Anhydrous Ammonia Storage and Distribution Plant* for either the 1 year term or 5 year term according to the application choice in (3) above.
- 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 (5) above is completed and the plant is

found to be satisfactory, the site owner may request permission to operate the plant although the licences described in (6) & (7) above may not have been issued.

#### **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 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* for 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 vessel owner of a pressure vessel that is in use or operation shall ensure that the pressure vessel is inspected every 5 years. No owner shall use or operate a pressure vessel unless there is a valid inspection certificate for that pressure vessel. Every site 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. 31<sup>st</sup>.

The site owner is also responsible to inform TSASK 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 a site owner with regards to the status of an anhydrous plant in the event of an accident. Please use the form [TSK-0013 Anhydrous Ammonia Status Update](#) to inform TSASK 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 TSASK, it is at the request of TSASK that these inspections intervals are coinciding with the 10 year internal inspections. The vessel owner shall inform TSASK of planned internal examination so that TSASK 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 every 5 years, depending on the most recent NDE results, or sooner based on any repairs that have recently been completed. It is requested that copies of the internal examination report be forwarded to TSASK for inclusion in the vessel file. Please use the form [TSK-0013 Anhydrous Ammonia Status Update](#) for submission of 3<sup>rd</sup> party NDE reports, and/or notification of upcoming internal inspections.

As described in Table 5 – Maximum serving Interval of the ‘Canadian Standards Association B51-14’, pressure vessels in anhydrous ammonia service shall have the pressure-relief safety valves serviced every five years. The servicing of the pressure-relief safety valves may or may not fall on the inspection interval with TSASK, however, it is requested that copies of the pressure-relief safety valve service report be forwarded to TSASK for inclusion in the vessel file. Please use the form [TSK-0013 Anhydrous Ammonia Status Update](#) for submission of the pressure-relief safety valve service report.