

Code Protocol: A4.1 – Security for Anhydrous Ammonia Storage and Handling Operations

Current Text(s): The anhydrous ammonia storage and handling operation must incorporate measures to prevent unauthorized access to the product. Acceptable measures include one or more of the following:

Fencing – Ammonia equipment is secured within a security fence and lockable security gates. Minimum height for fencing is 6 feet. Fencing can be either 5-foot wire fence topped with three-strand barb wire or 6-foot chain link, with or without three strands of barbed wire. – OR –

Valve and Tank Securement – All liquid valves that provide primary access to anhydrous ammonia as a means of containment have been physically secured with a valve lock. There must also be physical measures taken to prevent unauthorized removal of portable anhydrous ammonia storage vessels. – OR –

Other Physical Means of Security – Other acceptable means of security include intrusion detection systems, security presence or surveillance. There must also be physical measures taken to prevent unauthorized removal of portable anhydrous ammonia vessels.

Background: The intent of this Section of the Code of Practice is to prevent unauthorized access to the product and all ammonia assets at an established compound, via Engineering Controls (i.e. fencing, lock boxes, valve guards, etc.).

While options are provided, **Fencing** is the preferred method considering it establishes a physical barrier (at a safe distance) to prevent access at the perimeter of the compound to ensure asset / product security.

Currently, the majority of all sites use this method to achieve compliance with this section.

Observation(s): A random audit was recently conducted at an existing Code compliant site that relies on the **Valve & Tank Securement** alternative, as the primary means of compliance with Protocol A4.1. After the audit, the following concerns were identified with this method:

1. The site was unattended and the auditor still had direct / unimpeded access to all assets at the site;
2. While Engineering Controls (i.e. lock boxes) were used to secure hose end valves on the storage bullet, the lock boxes (due to hose size) still permitted unauthorized access to the hose end valve (see Figure 1). This would be common at all sites using this method, considering all liquid lines on storage bullets would be the same size (3"). Therefore, the slots in the boxes are ~4");
3. While valve locks were identified on nurse tank withdrawal valves, no securement devices were identified on numerous TDU and / or storage tank withdrawal valves within the plumbing systems; and
4. Despite this protocol requiring **both** product and asset security provisions, there was limited evidence of a physical means to prevent the unauthorized removal of any portable assets (both TDU and nurse tanks) from the site (full of product).



Figure 1. Storage Bullet Lock Box

Recommendation: Due to the safety and security gaps identified by the auditor during this random audit, concerns were raised with the adequacy of the compliance alternatives to fencing provided in this Protocol. While this was one random audit, the points outlined in the **Observations(s)**



section of this Proposal would be reasonably associated at all sites employing this compliance method for Protocol A4.1.

Proposal(s):	<p>Remove the current compliance alternatives from this Protocol and make it a mandatory requirement that all Code compliant compounds are fenced in order to maximize safety, security, and operational efficiencies.</p> <p>Timeline for implementation:</p> <ul style="list-style-type: none">• New sites built after January 1, 2019• Existing sites must install fencing by January 1, 2021
Justification:	<p>Fencing maximizes the level of security achieved at a storage compound by providing a direct physical barrier (all 4 sides and from a safe distance) to prevent unauthorized access into the tank compound.</p> <p>All tanks normally contain product and all equipment (i.e. hoses, valves, plumbing systems, etc.) is pressurized, in whole or in part, at any time. Therefore, preventing initial access into the compound, also limits opportunity for unauthorized access to the ammonia equipment, which further reduces the potential for asset compromise and / or an unintentional release.</p> <p>While the current alternatives of Valve and Tank Securement or Other Physical Means of Security (as outlined in the Code Appendices), do provide some barrier to the actual product stored in the tank, these alternative do not impede access into the compound nor contact with any ammonia assets (tanks, hoses, valves, plumbing systems, etc.). Thus, realizing no incremental reduction in the frequency / severity potential for unauthorized access to the product and / or asset(s), or an unintentional release.</p> <p>A typical nurse tank contains 3 valves (minimum) that would need to be secured at all times when the tank is unattended. A typical TDU or storage bullet can have several valves (10+ minimum), depending on the configuration of the plumbing system.</p> <p>The Valve and Tank Securement alternative prevents several realistic operational challenges from an implementation perspective during the application seasons, and while in storage during the off season (as evident from the recent random audit).</p> <p>For example, this method requires multiple locks and valve guards / chains in order to achieve compliance at all times to provide appropriate security protection when the asset is left unattended. Furthermore, this method does not provide securement of the asset from unauthorized removal, which requires further capital investment.</p> <p>Conversely, Fencing provides a single method to ultimately meeting the objective of the Ammonia Code of Practice, by maximize safety & security, and not impeding operational efficiencies via one single method.</p> <p>Based on recent experiences, average perimeter fencing costs are \$15 - \$20 / linear foot.</p>

Proposed Text(s):	A4.1 – Security for Anhydrous Ammonia Storage and Handling Operations
Revisions for the 2017 Code of Practice	<p>The ammonia equipment is secured within a security fence with lockable security gates.</p> <p>The minimum requirements for fencing of new sites, commissioned after January 1, 2019, is 6' chain link with a barbed wire top.</p>



FERTILIZER CANADA
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**Anhydrous Ammonia Code of Practice
Proposal – Amendment to Protocol A4.1**

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Existing Code-compliant sites using fencing, as the primary means of site security / compliance with this Protocol, can continue to use either a 5-foot wire fence topped with three-strand barb wire or 6-foot chain link, with or without three strands of barbed wire.

Note: For existing Code compliant sites where full perimeter fencing (all 4 sides) **is not** the primary means of site security, full perimeter fencing must be installed by January 1, 2021, in order to remain in compliance with this Protocol.