

Anhydrous Ammonia Code of Practice Summary of Protocol Changes 2022 to 2027 Edition

As part of Fertilizer Canada’s commitment to continuous improvement, Codes of Practice are reviewed and updated on a five-year cycle. The revised Anhydrous Ammonia Code will come into force on January 1, 2027. The updates to the Ammonia Code of Practice for the 2027 version include:

- Revisions to Code policy and protocols to address interpretation issues and clarify audit standards / documentation requirements.
- Updated guidance for site security requirements (e.g. lighting, fencing, new fencing technologies, etc.).
- Updates to protocols and guidance for regulatory requirements (e.g. meter creep testing, regulatory thresholds/interpretations, TDG site reporting requirements) and associated reporting / documentation requirements.
- Updated samples and templates available in the User Guide to ensure applicability to current regulations and standards (e.g. WHMIS labels).
- Maintaining “voluntary” status for ammonia mobile tank database reporting.
- Revisions to training protocols to address gaps in Code compliance with non-employee persons (e.g. third-party carriers) on Ammonia Code certified sites.

The following matrix summarizes the changes to individual protocols:

#	2027 Ammonia Code	Change from 2022 Edition
A.5	A.5 Operational Lighting: The anhydrous ammonia storage and handling operation is equipped with sufficient lighting to allow for the safe transfer of anhydrous ammonia during night-time operations. A dedicated lighting system beyond lights attached to vehicles must be in place for use when loading and unloading. All points around operation where anhydrous ammonia is transferred require dedicated lighting sufficient for work to be done safely.	Specifies that operational lighting must be a dedicated system (e.g. not vehicle lights) in place for loading and unloading.

	Compliance will be indicated through the presence of required operational lighting. In cases where temporary lighting setups are used in-season, compliance will be indicated through documentation (e.g. invoice, contract) that lighting equipment was in place.	
A.9	A.9 Protection Equipment The anhydrous ammonia storage and handling operation is equipped with the required protection equipment that is accessible and identifiable by all personnel. In addition to all personal protective equipment, specified in Section B7, the following designated protection equipment is required: A.9.1 Two anhydrous ammonia full-face respirators complete with spare canisters/cartridges. A.9.2 If required by provincial regulations, two self-contained breathing apparatuses (SCBA). A.9.3 Two one- or two-piece anhydrous ammonia resistant suits. A.9.4 First Aid kit of a size appropriate for the number of employees at the site. A.9.5 At minimum, a 10-pound charged ABC fire extinguisher (one located near each anhydrous ammonia transfer point), with current inspection tag. A.9.6 Two water supplies are required for emergency requirements. Water supplies may be either safety showers or 200-gallon water troughs filled with clean, fresh water and labelled with a white cross on a green background or a green cross on a white background to designate emergency response water. Troughs must be located within 10 metres of anhydrous ammonia transfer points. Water troughs must be located opposite to each other on either side of the storage vessel, considering the prevailing wind direction. Water must be heated to prevent freezing when transfer operations are occurring. Safety showers should follow the ANSI Z358.1 Standard and be accessible within 10 seconds. A.9.7 Emergency eyewash capability. A.9.8 Two wind indicators must be located at the anhydrous ammonia storage operation in order to determine the wind direction for emergency response purposes. <i>Compliance will be indicated through a visual inspection of all required emergency response equipment.</i>	Moved from Section B and renamed as Protection Equipment, to ensure protocol applies to all certified sites. Added to audit requirements that “the required protective equipment is maintained and in good condition”.

B.4.1	B.4.1 Storage Vessel Transfer Pump / Compressor The transfer pump(s) and compressor(s) on the anhydrous ammonia storage vessel must be approved by the manufacturer for anhydrous ammonia services. <i>Compliance will be based on documentation of the transfer pump or compressor type. Acceptable documentation includes a certificate or a letter from the manufacturer stating that the pump is approved for use with anhydrous ammonia. See User Guide for sample documentation.</i>	Added description of acceptable documentation to fulfil the requirements.
B.5.4	B.5.4 Storage Vessel Safe Handling	Protocol removed safe handling procedures for storage vessels. Requirement to post emergency first aid procedures in B.5.5 is maintained (now B.5.4).
B.6.1	B.6.1 Storage Vessel Bleed-Off Containment A containment tank for bleed-off liquid is required. The design of a bleed-off water system must follow these requirements: • The tank is at least 25 gallons in size • The tank is constructed of material compatible for use with ammonium hydroxide. Preference is given to poly tanks • The tank must not be sealed, to prevent the build up of pressure inside the tank created by mixing ammonia with water • Lines from all liquid bleed-off locations are routed and secured into the tank in order to ensure contact with water • The tank must be clearly labelled as bleed-off water to distinguish it from emergency water Note: Any Bleed Off equipment removed from service during the off-season must be available for inspection during an audit. <i>Compliance will be indicated through a visual inspection of the required containment tank and bleed off lines. Bleed off lines must be directed into containment tank.</i>	Additional detail added to the requirements for design of a bleed-off water system. This information was previously located in the User Guide, but was deemed as relevant for inclusion in the Protocol.
B.7	B.7 Personal Protective Equipment	Changed “employee” to “person” to ensure that all persons working with ammonia

	The anhydrous ammonia storage and handling operation is equipped with the required personal protective equipment. When handling, transferring and or repairing equipment that has potential for release that could cause injury from anhydrous ammonia, all required Personal Protective Equipment (PPE) must be worn. Examples where PPE is required to be worn include: • While connecting and disconnecting hoses for transfer (Note: when transfer operations are being completed (i.e. pumping is taking place) the operator can remove the PPE when in a safe area). • While bleeding equipment for transfer and after transfer operations are completed. • While personnel are performing maintenance, until all anhydrous ammonia has been evacuated from the equipment that is being maintained. Each person working with ammonia at an anhydrous ammonia operation must have the following: • B.7.1 Full-face cartridge style respirator complete with extra cartridges. • B.7.2 One- or two-piece anhydrous ammonia resistant suit (for example, neoprene). • B.7.3 Gauntlet style anhydrous ammonia resistant gloves (for example, neoprene). • B.7.4 CSA approved safety boot with a minimum six inch upper. • B.7.5 Individual emergency water bottle filled with clean, fresh water. <i>Compliance will be indicated through a visual inspection of the safety equipment, written documentation that suits are rated for anhydrous ammonia (such as a certification or testing report from the manufacturer or a third-party company), and interviews with operators to ensure that the proper type and quantity is available on site and used. See User Guide.</i>	at a certified operation are required to comply with the PPE requirements, not limited to employees. This change is intended to capture contractors and third-party carriers who would be handling or transferring ammonia on site.
C.1.4	C.1.4 Testing for Off-Truck Emergency Shutdown Systems (Meter Creep Testing) Off-truck emergency shutdown systems are tested as required by B620-20 Standards. <i>Compliance will be indicated through documentation of the last two inspection reports.</i>	Addition based on testing requirements from Transport Canada.

C.4.1	C.4.1 Transport Vessel Transfer Pump For Anhydrous Ammonia The transfer pump must be approved by the manufacturer for anhydrous ammonia service. <i>Compliance will be based on documentation of the transfer pump type. Acceptable documentation includes a certificate or a letter from the manufacturer stating that the pump is approved for use with anhydrous ammonia. See User Guide for sample documentation.</i>	Added description of acceptable documentation to fulfil the requirements.
C.4.2	C.4.2 Transport Vessel Transfer Pump Guards The transfer pump on the anhydrous ammonia transport vessel has been equipped with guards to prevent contact with rotating equipment, including drive pulleys, belts, and driveshafts. <i>Compliance will be indicated through a visual inspection of all transfer pumps to ensure they are equipped with guards to prevent contact with drive pulleys and belts.</i>	Adjusted protocol to ensure that transfer pumps are equipped with guards to prevent contact with all rotating equipment, including drive pulleys, belts, and driveshafts.
C.5.4	C.5.4 Transport Vessel Safe Handling Procedures	Protocol removed safe handling procedures for storage vessels. Requirement to post emergency first aid procedures in C.5.5 is maintained (now C.5.4).
C.6	C.6 Transport Vehicle Emergency and Personal Protective Equipment The anhydrous ammonia transport vessel is equipped with the required emergency and personal protective equipment. (a) Each transport vehicle must have the following: C.6.1 First Aid kit C.6.2 At minimum, 3A 10BC (5 lb) fire extinguisher with nozzle, with current inspection tag C.6.3 Minimum of 20 liters (5 gallons) of clean, fresh emergency water C.6.4 Roadside emergency kit C.6.5 Communication device (e.g. cell phone or two-way radio) <i>[...cont'd]</i>	Addition of requirement for fire extinguisher to have current inspection tag.

C.7	C.7 Transport Vehicle Certification All vehicles transporting anhydrous ammonia must have current Commercial Vehicle Safety Alliance (CVSA) certification. <i>Compliance will be indicated through an examination of the current CVSA safety sticker on vehicles or trailers used to transport anhydrous ammonia.</i>	Applicability of Protocol has changed from commercial licensed vehicles, to all vehicles transporting anhydrous ammonia. Removal of requirement for other vehicles to pass annual safety inspection.
C.11.6	C.11.6 Nurse Tank Hose Testing All hoses on nurse tanks have been annually tested and marked in accordance with the current CSA B620 standards. <i>Compliance will be indicated in two parts. First, all nurse tank hoses will be visually inspected to determine if they have been marked in accordance with CSA B620 standards. Second, the hose testing records will be reviewed to ensure hose testing has been documented and conducted at the appropriate frequency.</i>	Removed applicability of the Protocol to applicator hose testing. Applicator hoses only need to be tested if the ammonia tank is mounted on the applicator.
C.12.4	C.12.4 Nurse and Applicator Tank Emergency First Aid Procedures Emergency first aid procedures must be located on the tank. <i>Compliance will be indicated through a visual inspection of label on the tank to ensure the label meets requirements as per User Guide.</i>	Removed requirement to post safe handling procedures on tank.
C.17.1	C.17.1 Nurse and Applicator Running Gear Inspection Nurse and applicator running gear shall be visually inspected regularly during operational periods and documented. Inspections shall be done pre-travel and pre-fill, including: • Before the unit leaves the Ag Retail storage location • Prior or during each time the unit is filled • Prior to being returned to the Ag Retail storage location <i>Compliance will be indicated through a review of the maintenance program and records.</i>	Clarification that inspections shall be done pre-travel and pre-fill.
D.1	D.1 Facility General Safety Rules	Added clarification around how compliance will be measured,

	The management of the facility has developed, issued and reviewed the facility general safety rules with all employees of the facility. During discussion and observation, it appears that these rules are known and enforced. <i>Compliance will be indicated through documentation of facility general safety rules, observation, and discussion with the person responsible.</i>	adding documentation of facility general safety rules.
D.3	D.3 Transportation of Dangerous Goods Training All persons involved in the handling, offering for transport or transport of anhydrous ammonia have had training on the <i>Transportation of Dangerous Goods Act and Regulations</i>, specific to anhydrous ammonia, and have valid training certificates. This may include clerical staff involved in the handling, offer to transport and transporting administration process. Training is refreshed at a minimum of every three years as per TDG regulations.	Changed “employee” to “person” to ensure that all persons working with ammonia at a certified operation are required to comply with the training requirements.
D.4	D.4 Driver Certification Persons who operate transport units have received the required drivers license certification in accordance with the applicable Provincial Highway Traffic Act of Transport Regulation.	Changed “employee” to “person” to ensure that all persons working with ammonia at a certified operation are required to comply with the training requirements. This change is intended to capture contractors and third-party carriers who would be handling or transferring ammonia on site.
D.4.1	D.4.1 Drivers License Driver Licensing in accordance with applicable Provincial regulations is mandatory. <i>Compliance will be indicated by a letter from the current owner / operator or the person responsible indicating that the employer has verified that staff required to operate transport vehicles have a current and appropriate license as required by provincial authorities.</i>	Removed instructions on assessing compliance through examination of driver licenses.
D.4.2	D.4.2 Driver’s Abstract Employers must review driver’s abstracts annually.	Removed requirement to keep driver’s abstracts on file due to privacy concerns.

	<i>Compliance will be indicated by a letter from the current owner / operator or person responsible that this requirement has been met for the year</i>	
E.3.1	E.3.1 Annual Safety Inspection Records Records are available for the annual safety inspection of all vehicles transporting anhydrous ammonia.	Clarified applicability to all vehicles transporting ammonia, not limited to regulated vehicles. Recommended best practice for CVSA certification changed to a requirement.
E.3.3	E.4.4 Running Gear Maintenance Records are available for the seasonal and daily pre-fill / pre-travel visual inspections and a 5-year physical inspection of all running gear on nurse wagons. <i>Compliance will be verified through an examination of the maintenance records indicating that all nurse wagons have had a seasonal and daily pre-fill / pre-travel visual safety inspection(s) within the last 12 months and a physical safety inspection completed within the last 60 months (as applicable).</i>	Added clarification that records are available for daily pre-fill and pre-travel inspections, as well as seasonal inspections.
E.5	E.5 Site Registration Requirements This site ships products in conformance with TDG regulations and the shipping documents viewed verified this. This site has registered with Transport Canada's Client Identification database (CID). This site has completed their annual update with Transport Canada's Client Identification database (CID). Compliance will be indicated through examination of the documentation records indicating that the registration (and annual updates) for Transport Canada's Client Identification Database (CID) have been completed within the last 12 months. This protocol is not applicable to certified farm sites.	Clarified the protocol is not applicable to farm sites.
G.1	G.1 Written Emergency Response Plan The anhydrous ammonia operation has a written emergency response plan containing:	Clarified the requirement for the Emergency Response Plan to be dated, which should

	• An index or table of contents, have page numbers, and contain a list of plan holders and plan locations. • The date of last annual review. • Roles and Responsibilities for the key emergency response roles that are described in the emergency response plan including specific names and contact numbers. • [cont'd...]	indicate the date of last annual review. This aligns better with regulatory requirements and industry best practices.
G.6	G.6 Emergency Contacts List A current list of emergency contact numbers for local emergency responders, operation management and employees has been prepared and is located at: • Prominent locations, including the main office and at all phones. <i>Compliance will be indicated through examination of the posted emergency response contact list at the operation.</i> [cont'd...]	Updated requirements, specifying the emergency contact number list to be located at prominent locations (main office, all phones), rather than at all land lines, as some sites do not have land lines.
G.8	G.8 Contaminated Run-Off Water The anhydrous ammonia operation has developed a plan for the containment of contaminated run-off water produced from emergency response activities. Sites in close proximity (within 100m) of an environmentally sensitive area must also comply with A.3. Contaminated run-off water plan must include the following: • An analysis of the topography of the operation to identify run-off direction • Identification of potential at-risk water sources within one (1) kilometer of the operation. • Identification of measures to be taken in advance of an incident (e.g. construction of retention berm) • Identification of measures to be taken at the time of an incident (e.g. plugging of culverts with sandbags)	Added requirement for sites in close proximity (within 100m) of an environmental sensitive area to also comply with A.3.

	<i>Compliance will be indicated by a verification of elements in the emergency plan.</i>	
G.10.1	G.10.1 Environmental Emergency (E2) Plan Protocol All Retail Anhydrous Ammonia sites with fixed storage facilities in quantities of 4.5 tonnes or more must have a process to comply with the Environmental Emergency (E2) Regulations of the Canadian Environmental Protection Act. For the purposes of the E2 Regulations, mobile tanks stored for more than 72 hours are considered fixed storage and are covered by the regulations if volume thresholds are met. E2 plans and procedures will be written and current with documentation maintained for a minimum of 7 years. Plan preparations, registrations and schedule submissions must be completed by required deadlines. Annual E2 Plan practice is required (could be a table-top exercise). A full E2 Plan practice simulation exercise is required every 5 years. <i>Compliance will be indicated by an examination of written procedures, and on-site documentation. This protocol is not applicable to certified farm sites.</i>	Added clarification that mobile ammonia tanks stored >72 hours are considered fixed storage under the E2 Regulations. Added clarification that the protocol is not applicable to certified farm sites.
G.10.2	G.10.2 Emergency Assistance Response Plan (ERAP) All Anhydrous Ammonia Sites/Locations that have Delivery Units with tanks in excess of 3,000 L must apply for and have a valid Transport Canada Approved Emergency Response Assistance Plan (ERAP). All Anhydrous Ammonia Sites/Locations that have Nurse Wagons that exceed 10,000 litres in capacity must apply for and have a valid Transport Canada Approved Emergency Response Assistance Plan (ERAP). (Note: ERAP number will be the same for locations with Delivery Units and Nurse Wagons.) <i>Compliance will be indicated by visual examination of the site/location ERAP approval documentation. Auditor will record site ERAP number. This protocol is not applicable to certified farm sites operating under the Agriculture: Anhydrous Ammonia Exemption (section 1.24) of the TDG Regulations. See the User Guide for more information.</i>	Clarification that compliance will be based on ERAP approval documentation, not ERAP number. Clarification that the protocol is not applicable to certified farm sites that are operating under the section 1.24 exemption.

H.7	H.7 Emergency Equipment The anhydrous ammonia railcar transfer operation is equipped with the required emergency equipment that is accessible and identifiable by all personnel. In addition to all personal protective equipment specified in Section 0, the following additional equipment is required: H.7.1 Two canister type anhydrous ammonia full-face respirators complete with spare canisters/cartridges. H.7.2 If required by provincial regulations, two Self-Contained Breathing Apparatuses (SCBA). H.7.3 Two one- or two-piece anhydrous ammonia resistant suits (protected from the weather). H.7.4 First Aid kit of a size appropriate for the number of employees at the operation. H.7.5 At minimum, a 10 lb. ABC fire extinguisher (one located near each anhydrous ammonia transfer point), with current inspection tag. H.7.6 Two water supplies are required for emergency requirements. Water supplies may be either safety showers or 200-gallon water troughs filled with clean, fresh water and labelled with a white cross on a green background or a green cross on a white background to designate emergency response water. Troughs must be located within 10 metres of anhydrous ammonia transfer points. Water troughs must be located opposite to each other on either side of the storage vessel, considering the prevailing wind direction. Water must be heated to prevent freezing when transfer operations are occurring. Safety showers should follow the ANSI Z358.1 Standard and be accessible within 10 seconds. H.7.7 The transfer operation has emergency eyewash capability at the water troughs. H.7.8 A wind indicator must be located at the anhydrous ammonia transfer operation in order to determine wind direction for emergency response purposes.	Requirement changed from a 5 lb ABC fire extinguisher to a 10 lb ABC fire extinguisher. This aligns with the requirements in B.8. Added requirement for fire extinguisher to have current inspection tag.
I.1	I.1 Insurance The ammonia operation has documentation of insurance coverage. The facility has documentation that gives evidence of current policies of insurance covering the following areas of risk exposure:	Minimum deductible increased from \$25,000 to \$50,000.

	1. Environmental impairment liability (EIL) in the minimum amount of \$1 million covering third party bodily injury and property damage and off-premises clean up expenses with \$1 million policy aggregate for all occurrences; and \$1 million covering on-premises clean up with \$1 million policy aggregate for all occurrences. 2. Owned automobile liability (applicable to any and all vehicles that are owned or leased or operated by the facility in connection with the facility's business) covering bodily injury or property damage to third party interests in the minimum amount of \$5 million per loss occurrence. 3. Non-owned automobile liability in the minimum amount of \$5 million per loss occurrence. 4. Comprehensive General Liability (CGL) in the minimum amount of \$5 million per loss occurrence. Note: a) Any endorsement or other policy wording that directly or indirectly selects fertilizers as specifically excluded from coverage, or that selects fertilizers for diminished coverage, is NOT acceptable. b) No deductibles more than \$50,000 are permitted. <i>Compliance will be indicated through examination of the confirmation of coverage form*.</i> *Note: A copy of the Insurance confirmation form can be found at the back of this book.	
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