Safety, Security and Environmental Committee

1. Code of good practice – Legal considerations
2. E2 Regulation 2019 – update & reminders
3. Empty/Contaminated Explosives Packaging management- TC Research project
4. Quebec MOE Env. Impact Assessment- Explosives Plants
5. Storage of AN in Canada – Requirements

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Codes of Practice

Guidance Document

GUIDELINES FOR TRANSPORTATION OF AMMONIUM NITRATE EMULSION EXPLOSIVES [1.5D] IN TANK VEHICLES

****DRAFT*****

SUGGESTED MINIMUM REQUIREMENTS INCORPORATING "EXPLOSIVES REGULATIONS 2012"

No 1

CODE OF GOOD PRACTICE/ GUIDE DES BONNES PRATIQUES

October 2019 / Octobre 2019

ENVIRONMENTAL MANAGEMENT AND PROPERTIES OF AMMONIUM NITRATE BASED EXPLOSIVES /
GESTION ENVIRONNEMENTALE ET PROPRIÉTÉS DES EXPLOSIFS À BASE DE NITRATE D'AMMONIUM

EXPLOSIVES FOR THE BETTER / EXPLOSIFS POUR LE MEILLEUR

Canadian Explosives Association / Association Canadienne de l'Industrie des Explosifs

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The following roles for AEISG and its members were incorporated into its Constitution:

The primary goal of the AEISG is to continuously improve the level of safety and security throughout the manufacture, transport, storage, handling and use of explosives and their precursors (e.g. AN, ANEs) throughout Australasia.

- Create an environment for open exchange of opinions/ideas on explosives industry matters;
- Disseminate information in relation to explosives industry issues,
- Health and safety (e.g. accidents, incidents)
- Security
- Environmental
- Technological advances in safety and security
- Represent the explosives industry nationally and internationally to regulatory bodies on safety, security and other matters;
- Liaise with national and international organisations to progress improved safety and security in the explosives industry;
- Develop and promote industry Codes of Practice (minimum acceptable standards);
- Promote consistency in legislation covering the explosives industry;
- Promote community perception of a competent and responsible industry.

Current Versions

FILE NAME	EDITION
Storage and Handling of UN3375	Edition 5 July 2018
Mobile Processing Units	Edition 4 September 2018
Mobile Processing Units – Compliance Checklist	Edition 4 September 2018
Blast Guarding in an Open Cut Mining Environment	Edition 2 November 2018
Elevated Temperature and Reactive Ground	Edition 5 April 2020
Prevention and Management of Blast Generated NOx Gases	Edition 2 August 2011
NOx Risk Assessment Proforma Tool	
Segregation Barriers for Transporting Mixed Loads of Detonators and High Explosives	Edition 3 May 2019
On-Bench Practices for Open Cut Mines and Quarries	Edition 3 June 2019
Import of Explosives	Edition 1 April 2021

AEISG

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2- Environmental Emergency Regulation (E2), 2019

Sites storing more than 20 tonnes of AN prill/AN solution in a single container

- Came into force on August 24, 2019.
- Need to *resubmit* all required information into the E2 reporting system in SWIM (Single Window Information Manager).
- Deadline for schedule 2 submission was November 22, 2019.

Major steps - E2 - Reminder

1. Notice : 90 days (November 22, 2019)
2. Plan preparation : 6 months;
3. Plan implementation : 6 months;
4. Plan testing : At least one component of the plan must be included in an exercise at least once a year;

E2 – Reminders - Exclusions

- E2 applies only to AN Prill and ANSol
- E2 doesn't apply to bulk emulsion. Reason being bulk emulsion AN percentage is 75-77 %. Minimum threshold is 81 %

Exclusions

The E2 Regulations, 2019 include 'substance', and 'quantity' exclusions:

- Certain categories of substances are excluded from the definition of 'substance' and thus, excluded from the requirements under Part 8 of CEPA;
- Quantities of substances, that are excluded from the determination of total quantity located at a facility; and
- Substance, when present in a mixture, below the threshold concentration is excluded.

TC Explosives Packaging Research Project

TC is evaluating the possibility to fund a research project on the future use of the shredder and shredded material. It would include the determination of the presence of molecular explosives residues on the packaging after processing.

Quebec MOE - Regulation 23.1 - Regulation Respecting the Environmental Impact Assessment and Review of Certain Projects

The following projects are subject to the procedure:

(1) the construction of a plant for the manufacturing of explosives, explosive detonators or explosive devices;

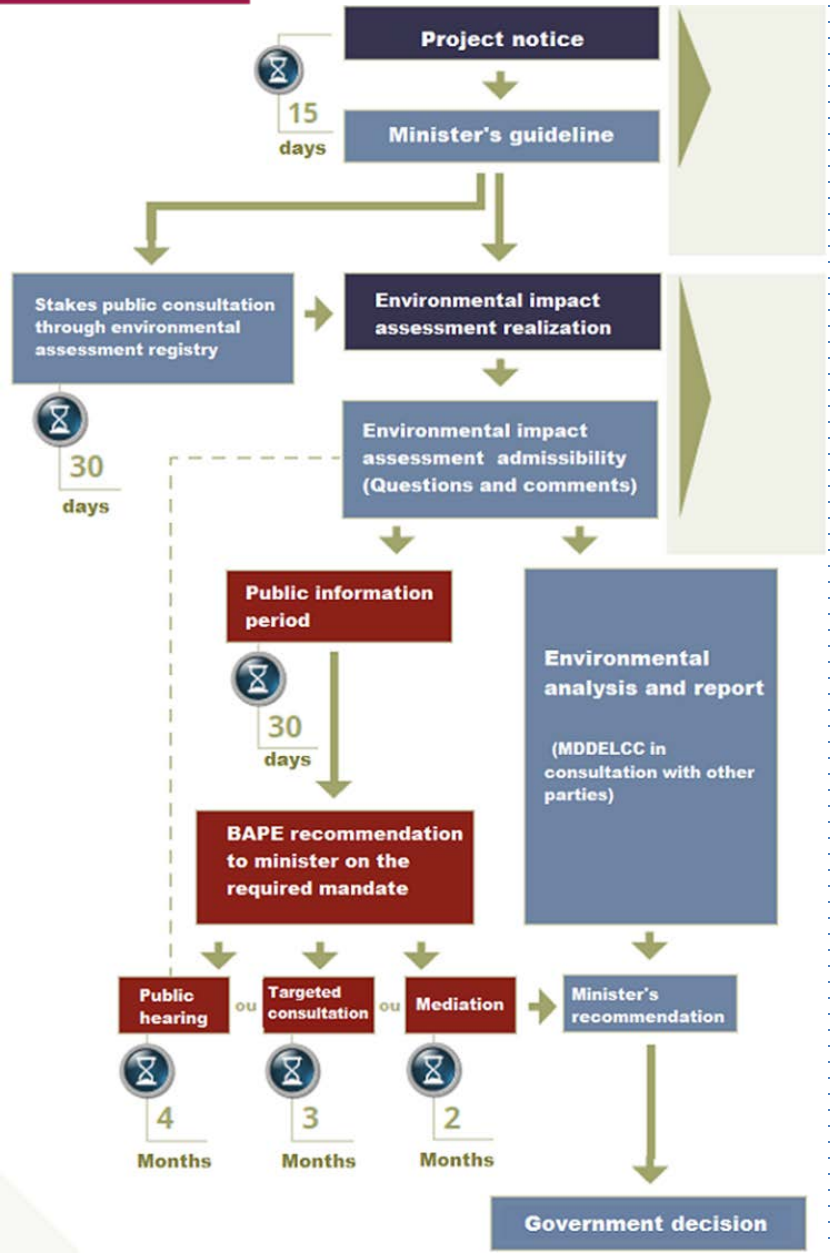
(2) the increase of the maximum daily production capacity of 10% or more of such a plant;

(3) the increase of the maximum daily production capacity that results in an expansion of 25% or more of the operation area of such a plant.

Approval delays for a project going to public hearing may increase to up to 12 months.

Sites manufacturing only non-sensitized emulsion matrix can be excluded from this regulation.

Give yourself sufficient time to ensure you will meet your schedule needs.



Beirut Incident

Root causes :

- Initial fire caused by hot work inside warehouse;
- Presence of combustible/incompatible materials:
  - 23 tonnes fireworks
  - 50 tonnes ammonium phosphate
  - 1000 car tires
  - 5 rolls slow burning detonating cord
  - 5 tonnes of tea/coffee
  - etc.;
- Ammonium nitrate bags (HD) torn open, spilled and contaminated over a 7 year period (2750 bags);
- Several warnings from experts ignored;
- Three different fire plumes before AN got involved.

In summary : ***Substantial and sustained negligence***

Safe Storage of AN Prill - Reminder

- One storey building without basement, made of non-combustible material.
- Use floors without drains, traps, tunnels to prevent molten AN to be confined.
- Keep building dry and prevent water contact.
- Store at a temperature < 55°C.
- Electrical Classification compliant to building code.
- Do not park/store any internal combustion engine vehicle in the warehouse.

Safe Storage of AN Prill - Reminder

- Eliminate punctual heat sources near product.
- Avoid product contamination by combustible, organic or inorganic material by using a fire resistant wall or a 30 feet minimal distance.
- Never expose product to shock waves from explosives. The AN must be separated from explosives by a safe distance.
- Automatic sprinkler system recommended for buildings made of combustible materials

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NFPA

FACT SHEET

AMMONIUM NITRATE SAFETY

Many misconceptions exist surrounding the dangers of ammonium nitrate, particularly following the explosion in Beirut, Lebanon in August 2020. Ammonium nitrate is a chemical compound produced in both solid and liquid form that is commonly used in fertilizers. Pure ammonium nitrate is stable, and when stored properly, it poses few safety hazards. But there are some critical issues to understand to best protect a facility that stores or handles ammonium nitrate.

How and When Ammonium Nitrate Turns Dangerous

Although it is not technically classified as an explosive or flammable material, under certain conditions, ammonium nitrate can present a significant explosive threat because it is an oxidizer — an oxygen-rich compound that can accelerate fires or explosions. Ammonium nitrate, however, needs another element to destabilize it for such a reaction to begin.

Exposure to elements such as fire or heat can start the process of destabilizing ammonium nitrate, making it self-reactive and prone to releasing flammable and ignitable gases.

Code enforcers, business owners, and facility managers can help protect buildings before an incident occurs or before it becomes an enforcement issue by knowing what can make ammonium nitrate dangerous.

Highly Dangerous Conditions

The likelihood of an explosion increases if ammonium nitrate is subject to conditions such as:

- If ammonium nitrate has been changed to liquid form by heat, becomes molten, and accumulates in large pools
- If there is potential for the confinement of molten ammonium nitrate, such as in drains, pits, sumps, sewers, or dead spaces in equipment
- If there is potential for a physical shock to the molten ammonium nitrate, such as high-velocity projectiles generated in a fire
- If ammonium nitrate is or becomes contaminated before or during a fire

NFPA 400 / SLP 30

- **New Construction and Existing Facilities:**
  - Must comply with all the construction requirements that were in place when the facility was built
  - Sprinklers are required retroactively for facilities that are of combustible construction or that have combustible contents
  - Water-based suppression systems are the only type allowed in areas containing ammonium nitrate, as the purpose of the water is both to suppress an exposure fire and to cool the ammonium nitrate. The water helps to prevent both decomposition of ammonium nitrate and the formation of molten ammonium nitrate, which, when confined, can create an explosion hazard.

New Topic Ideas – SSE Committee

- Best practices for sodium nitrite on bulk sites
- Explosives trucks management during natural disasters (floods, forest fires, etc.)
- Tire fires – how to prevent & extinguish them
- Emergency Response preparedness – transportation incidents