

UN/OECD online seminar in follow-up to the 2020 Beirut port explosion:

Lessons learned, experiences and good practices in managing risks of ammonium nitrate storage, handling and transport in port areas, preventing accidents and mitigating their consequences

Questions and answers

Asked by (name/country/organization)

AN and its chemical characteristics

Australia:

With reference to the presentation of Maureen Wood - Slide 9. I would like to clarify if the EU Detonability Test should apply to Non-Hazardous Ammonium Nitrate Fertilisers? I cannot see the need to apply this to Ammonium Nitrate that has been classified as a dangerous good as per the International Maritime Dangerous Goods Code (IMDG) and UN Criteria of Tests. Could you kindly clarify this point please? Thanks.

ICL Group Ltd.:

Can the decomposition temperature of AN be lower than 170 oC, in case of contamination or additives?

Myanmar:

Which substances would be incompatible with AN?

Legal instruments, policy and control and inspections

NGO 'La grande puissance de Dieu':

Please, how to sensitize and prevent all the countries worldwide about this important danger?

Answer provided

Maureen Wood (EC JRC):

In response to the question about detonability, you would have to consult the [Regulation \(EC\) 2003/2003](#) (notably article 27 thereof), governing ammonium nitrate products that are commercially acceptable in the EU market, and presumably export and import. The JRC Major Accidents Hazards Bureau has no expertise in this legislation, in so far as it applies to coverage under the Seveso Directive.

Heike Michael-Schulz (Germany):

Yes this is possible, also some combinations are more critical for example copper together with chloride.

Rachel McCann (OECD):

The [Forensics Architecture video](#) referenced UK and Australian regulations on storage including keeping AN away from combustible materials and anything that may contaminate the AN.

Heike Michael-Schulz:

Incompatible with AN (should also not stored together AN/AN based products) are: acids, chlorate, chlorite, nitrite combustible materials, sulfur...

Maureen Wood (EC JRC):

- [Guidance of UN class of ammonium-nitrate based substances.pdf \(fertilizerseurope.com\)](#)

- https://minerva.jrc.ec.europa.eu/EN/content/minerva/-79837f29-3146-480c-be69-af86e1639a75/srtseviiammoniumnitrate_safetypdf
- https://minerva.jrc.ec.europa.eu/EN/content/minerva/79837f29-3146-480c-be69-af86e1639a75/srtseviiammoniumnitrate_safetypdf
- https://minerva.jrc.ec.europa.eu/en/shorturl/minerva/5_mahb_bulletin_no5_final_fortheweb

Alan Tordoir:

Is there a requirement from other legislators to have higher TNT equivalence factors for AN drill used in the mining/query industries?

M. Braithwaite:

There is a maximum available energy that can be produced by ammonium nitrate detonation perfectly (CJ Detonation). This TNT equivalence is about 42% for a medium that hypothetically reacts instantaneously. In reality AN is a non-ideal explosive and actual equivalences will be less than this and dependent on storage factors.

Remarks by Mark Hailwood (Germany):

Regulations:

- These exist in many places, but not everywhere - governments must assess their current situation.
- Compliance: Industry needs to comply with regulation, standards and good practice and maintain good governance to understand what they need to do.
- Inspection and Enforcement: Public authorities must be able to oversee business and industry to ensure compliance is achieved. This requires competence, training and cooperation between authorities.
- Emergency Preparedness and Response: Information and Planning, together with appropriate equipment are needed for adequate response.
- Knowledge: Those who need knowledge must make efforts to gather it; those who have knowledge must share it.

Intermediate storage and transport
Poland:

Regarding intermediate storage of hazardous substances containing AN (fertilizers) in port areas: What if the hazardous substances are always present (in a long period of time) in the port area in large quantities in specially

Rachel McCann:

Seveso does not apply to transport activities and associated temporary storage. It must be determined whether movement through a port is temporary storage related to transport to decide

dedicated reloading and storage areas, despite the continuous process of collection, loading and unloading substances on the means of transport from different suppliers. If the maximum storage capacity of hazardous substances in this case is above threshold qualifying for UNECE TEIA Convention or Seveso Directive, will you qualify it?

Poland:

Thank for your answer. We know and apply exemptions from the application of SEVESO regulations for "chain transport". However, for us, the difference between temporary storage for transport purposes and the storage of hazardous substances in specially dedicated containers for further transport is not clear and unambiguous. Under what conditions can the storage of these substances be treated as temporary in the transport chain?

Raynald Boies:

Does any country require driver assistance systems (electronic driving stability system, speed recording system, geolocation system, etc.) for hazardous material tank trucks?

whether Seveso is applied. Application of the UNECE TEIA Convention is similar to Seveso.

Michael Struckl:

Article 2 Nr. 2 c excludes the "transport chain" from the scope of the Seveso III Directive. On the other hand, the definition of the installation in Art. 3 nr. 8 includes port areas if they are part of the installation but outside of the "transport chain" with change of means.

Michael Struckl:

So far no common agreement has been reached on this by Seveso competent authorities committee and expert groups.

UNECE:

International agreements do not prescribe these devices unless for some high consequence dangerous goods. This does not prevent countries to require them for national transport or private transport companies to use them. As far as we know, Thailand does require them for national transport. Please note that this answer refers to geolocalisation devices.

Olivier Kervella:

there are requirements for equipping vehicles with such systems in the 1958 Agreement, but they do not relate specifically to vehicles carrying dangerous goods. There are specific speed recording requirement in the AETR Agreement (not specific to carriage of dangerous goods). For vehicles carrying dangerous goods, there are specific construction requirements for vehicles carrying explosives or those carrying dangerous goods in tanks, including specific braking requirement, requirements for electrical systems, prevention of fire risks, stability and rear-protection of tank-vehicles, and speed limitation devices. Refer to ADR Part 9 or consult Mr. Romain Hubert, UNECE secretariat for further details.

In relation to geolocalisation devices, the UNECE Working Party on the Transport of Dangerous Goods is currently working on the possible use of telematics including geolocalisation, in



relation to transport of dangerous goods, in particular linking consignors, carriers, emergency responders and authorities). Please consult UNECE Sustainable Transport Division for further details

Similar technical requirements for the construction of ADR vehicles are available in UN Regulations Nos. 105 and 13 at:

<https://unece.org/transport/vehicle-regulations-wp29/standards/addenda-1958-agreement-regulations-101-120>

Alex Mandl:

In Australia at the moment, transport industry operators are increasingly using vehicle assistance technology including stability control systems. A number of recent accidents have shown the value of these systems in increasing driver control and reducing the severity of accidents. Most operators now use vehicle telematics to maintain constant contact with their vehicles including driver attention monitoring, multiple onboard cameras and remotely operated and automatic fire suppression systems.

Some useful references https://www.fertilizerseurope.com/wp-content/uploads/2019/08/Guidance_of_UN_class_of_ammonium_nitrate_based_substances.pdf