



# Specific Process Safety Risks in Ammonia and Urea plants

- Identification and assessments tools -

3 days training course

19 – 21 June 2019

Amsterdam, the Netherlands

UreaKnowHow.com  
Where the Urea industry meets

 AmmoniaKnowHow  
NH<sub>3</sub> HNO<sub>3</sub> CH<sub>3</sub>OH NPK (NH<sub>4</sub>)(NO<sub>3</sub>)

**TRAINING**

**2019**

## WHO WE ARE

**Mr. Dan Cojocaru**

Chartered Chemical Engineer

Registered Professional Engineer of Queensland

Founder of AmmoniaKnowHow.com

17 years operation and engineering experience in ammonia projects developed in Germany, Vietnam, Egypt, Saudi Arabia, Romania, Algeria, Slovak Republic and Russia.

Expert: Ammonia process, commissioning, startup, process safety

**Mr. Mark Brouwer**

Chemical Engineering, University of Technology Eindhoven, The Netherlands

Safety for Engineers, postgraduate continuing professional education Heerlen, The Netherlands

7 years ethylene plant DSM (revamp projects, safety)

14 years Stamicarbon (revamp projects, services, hardware supply)

Founder of UreaKnowHow.com (March 2009)

## Learn to identify, assess and communicate process safety risks in Ammonia and Urea plants

This course examines the causes and prevention of ammonia and urea incidents. It categorises the key hazards which must be controlled and reviews in detail the most common hazards associated with ammonia and urea plants.

The course draws upon the past industry accidents and incidents, as well as errors in design, sometimes only revealed in operation. You will gain an understanding of the key operation, maintenance and plant modification aspects which must be controlled to ensure safe operation of ammonia and urea plants.

Effective risk assessment is fundamental to protecting businesses against the potentially devastating impact of process safety incidents; in most countries it is also a legal requirement.

This course describes the processes used to identify, assess and communicate process risks from a safety, environmental or business perspective, from a simple qualitative approach to fully quantified assessments, together with the demonstration that risks are as low as reasonably practicable.

You will better understand the principles of inherent safety and their application to existing facilities. This practical course discusses numerous real-life examples that can help establish a safer, more efficient and more profitable plant.

### **A Certificate of Completion will be part of this Training Program**

## Day 1 – Risk identification and assessment tools

### Module 1: Hazard identification and risk management for operation plants

- Risk Management Process
- Inventory of Health & Safety hazards within Fertilizer plant activities
- Hazards identification and assessment studies and techniques (HAZID/HAZOP)
- Risk ranking using a risk matrix
- Risk assessment guidelines and procedures (ALARP demonstration)

### Module 2: Using lessons learned from past incidents in Ammonia and Urea plants

- FIORDA Incident Database for Ammonia Plants
- FIORDA Incident Database for Urea Plants
- Sections and Equipment with most Safety Hazards in Ammonia Plants
- Sections and Equipment with most Safety Hazards in Urea Plants



\*FIORDA – Fertilizer Industry Operational Risks Database ([www.fiorda.eu](http://www.fiorda.eu))

### Module 3: Key findings and recommendation for Ammonia and Urea hazards

- Key findings and recommendations in safety studies for Ammonia plants
- Key findings and recommendations in safety studies for Urea plants

### Risk Assessment (Workshop)

- Risk assessment workshop based on case studies from Ammonia plants
- Risk assessment workshop based on case studies from Urea plants

## Day 2 – Specific HSE risks for Urea plants

### Module 1: The Lessons Learned from the First 100 Safety Hazards in Urea Plants

- Incident Database, Risk Registers for Urea Plants
- Sections and Equipment with most Safety Hazards
- Major Safety Risks in Urea Plants
- Health concerns related to ammonia, CO<sub>2</sub>, urea, UF85, ammonium carbamate
- Consequences how to behave in a urea plant?
- Consequences for doing HAZOP studies
- Risk assessment workshop based in a case study

### Module 2: Explosion Risks (Workshop)

- Theory of explosive mixtures and explosion diagrams
- Going through the plant (Stamicarbon and Saipem); which sections can be explosive?
- Explosive Risks during shut-down, start-up, blocking-in, Turnarounds

### Module 3: Environmental Management for Urea Plants

- Air emissions & noise
- Wastewater
- Hazardous waste

## Day 3 – Specific HSE risks for Ammonia plants

### Module 1: Incidents and corrective actions in Ammonia plants

- Case studies for incidents in Reforming section of Ammonia plants
- Case studies for incidents in HT and LT shift convertors
- Case studies for incidents in CO2 removal section of Ammonia plants

### Module 2: Incidents and corrective actions in Ammonia plants

- Case studies for incidents in Methanation section of Ammonia plants
- Case studies for incidents in Synthesis section of Ammonia plants
- Case studies for incidents in Ammonia Storage tanks

### Examination & Evaluation

## Additional Training courses for Ammonia industry:

5-day Ammonia Advance Training program for operators, supervisors, engineers and managers – 24 -28 June 2019, Amsterdam, the Netherlands

## Additional Training courses for Urea industry:

5-day Urea Training program for Urea Managers, Engineers and Shift Supervisors – June 2020, Amsterdam, the Netherlands

[3-Day UreaKnowHow Master Class](#): A follow up for the 5-day Urea Training program for Urea Managers, Engineers and Shift Supervisors

## Dates

19-21 June 2019

## Location

NH CARANSA Hotel, Rembrandtplein, Amsterdam, Netherlands

## Fees

**EUR 2.450**, -- excl. VAT (if applicable, normally only for UK companies)

## Discounts

Discounts are available to companies booking more than one place:

- Early bird discount before December 2018 - **10% discount**
- Group discount for 4 or more places - **10% discount**

Multiple places must be booked at the same time to qualify.

Cumulative discount applicable (early bird + group discount).

## Accommodation

Accommodation is not included in the delegate fee. If you need any help with booking a hotel, we will provide contact details for hotel reservation.

## Contact

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