



OIL, GAS AND PETROCHEMICALS TRAINING

Nitric Acid, Phosphoric Acid and NPK Fertiliser Production

5 day course

Classroom, online or in-house

Course overview

Nitric acid trains lose money through gauze losses and nitrous oxide limits, phosphoric acid plants through gypsum filtration and scale, and NPK granulators through poor recycle ratio and moisture. Here the three are treated as one nutrient chain, starting downstream of ammonia. It opens with ammonia oxidation over platinum rhodium gauzes, absorption, tail gas treatment for NO_x and N₂O abatement, and mono and dual pressure plant designs. Wet process phosphoric acid follows: phosphate rock quality, digestion with sulphuric acid, dihydrate and hemihydrate routes, filtration, concentration, fluorine recovery and phosphogypsum. The NPK section covers neutralisation, pipe reactors, the chemistry of ammoniated phosphate granulation, recycle control, drying, coating and caking prevention. Plant staff leave able to troubleshoot each step and link raw material quality to final product grade.

What you will learn

- Explain ammonia oxidation and the factors that drive gauze efficiency and loss
- Operate nitric acid absorption to meet strength and tail gas limits
- Select nitrous oxide and NO_x abatement methods
- Relate phosphate rock quality to phosphoric acid plant performance
- Control dihydrate and hemihydrate reaction and filtration conditions
- Manage phosphogypsum and fluorine recovery responsibly
- Control neutralisation and pipe reactor chemistry in NPK production
- Diagnose granulation, drying and caking problems from product data

Who should attend

- Fertiliser plant operators and supervisors
- Process engineers in nitric and phosphoric acid plants
- Production managers in fertiliser complexes
- Environmental officers responsible for stack and effluent compliance
- Quality staff managing NPK product grades

Course outline

- 01 Fertiliser chemistry and the nutrient chain
- 02 Ammonia oxidation and gauze management
- 03 Nitric acid absorption and tail gas
- 04 Phosphate rock and acid digestion
- 05 Filtration, concentration and phosphogypsum
- 06 Neutralisation and pipe reactors
- 07 NPK granulation chemistry and recycle
- 08 Drying, coating and caking control

Upcoming dates



Dates	Venue	Format	Fee per delegate
26 to 30 October 2026	Johannesburg, South Africa	Classroom	R19,950
16 to 20 November 2026	Nairobi, Kenya	Classroom	USD 1,325
1 to 5 March 2027	Online	Online	R8,500
8 to 12 March 2027	Maputo, Mozambique	Classroom	USD 1,325

Fees and how to register

This 5 day course is **R8,500** per delegate online, **R19,950** in the classroom in South Africa, Botswana, Namibia, Lesotho and Eswatini, and **USD 1,325** in the classroom elsewhere in Africa. In-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afriScience.co.za, or WhatsApp us on **+27 63 479 1136**.

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