



SCIENTIFIC UPDATE

We've got chemistry



THE DESIGN, DEVELOPMENT AND SCALE-UP OF SAFE CHEMICAL PROCESSES AND OPERATIONS:

Principles and Practice

OCTOBER, 9-11, 2019

Princeton,
New Jersey,
USA
DEKRA Process
Safety

A 3 day course
for chemists and
engineers given by

"It is very useful to chemists
and chemical engineers to
do their jobs safely."

Cambrex

 **DEKRA**

THE DESIGN, DEVELOPMENT AND SCALE-UP OF SAFE CHEMICAL PROCESSES AND OPERATIONS:

Principles and Practice

Multiple attendees discounts
UP TO 15% available

October, 9 -11, 2019 Princeton, New Jersey, USA, DEKRA Process Safety

INTRODUCTION

Developing safe processes is of paramount importance to any chemical company. Exothermic chemical reactions in batch and semi-batch processes can result in serious injury to people and plant if they get out of control. Results of thermal runaways include violent loss of containment, possibly explosion and the release of flammable or toxic materials to the environment.

Employers are bound by Health & Safety legislation to ensure the safety of their employees and those outside their employment who might be affected by their activities. Chemical manufacturers must therefore be aware of all potential dangers in their processes and take steps to eliminate them. The best approach is to design safety into the process from the start.

Often, the first sign of loss of control over a reaction is a reduction in yield or in the quality of the product. Thus safety, quality and profitability are all interlinked.

This seminar is designed to enhance the awareness of chemists and engineers regarding hazard issues. Utilizing the expertise of the chemists and chemical engineers at DEKRA Process Safety and Scientific Update, it will consider hazard control of new chemical processes throughout their development cycle: from early development through to full-scale production. Hazards can often be eliminated by appropriate choice of reagent or synthetic route at the R&D stage. Where this is not possible, techniques exist to quantify the hazards so that robust engineering solutions can be applied in production.

COURSE OUTLINE

Wednesday 9 October 2019

- > The Process Lifecycle
- > Where hazards arise – a review of reported incidents involving runaway reactions and current legislation
- > Techniques for safe process design and optimization
- > Chemical hazards assessment strategy
- > Fundamental principles of scale-up and reaction runaway
- > Workshop problems
- > Identification of highly energetic materials
- > Small scale screening tests for liquids, mixtures and powders
- > Reaction characterization through calorimetry

Thursday 10 October 2019

- > Characterization of runaway reactions using adiabatic calorimetry
- > Case studies
- > Flammability issues associated with chemical manufacture (including a brief discussion of electrostatic hazards)
- > Tour of DEKRA Process Safety Laboratories

Friday 11 October 2019

- > Selection of Safety Measures and Case Study
- > Emergency relief venting methodology
- > Relief system case studies
- > Process control considerations (safety critical systems, Safety Instrumented Systems, ISA S84.01/IEC 61508/11, equipment reliability and maintenance)



DEKRA is an industry-leader in expertise relating to process safety. They have consulting offices in the United States, Europe, and Asia as well as laboratories in Princeton, NJ, Chicago, IL and Southampton, England. DEKRA has international consulting and state of the art ISO 17025 and GLP accredited dust explosion, gas and vapor, flammability, and electrostatic testing laboratories and specialist facilities for the evaluation of thermal runaway reactions and energetic materials (pyrotechnics, propellants, explosives). DEKRA employs a distinguished

engineering and scientific staff that includes doctoral-level specialists along with graduate engineers, scientists and technicians. DEKRA senior consultants are internationally recognized experts in their fields, and many have served on national and international standards committees. We have provided process safety consulting, training, and testing services to almost all of the largest chemical, pharmaceutical, and food processing companies around the world.



VENUE

This course will take place at DEKRA's offices based in Princeton.

DEKRA Process Safety
113 Campus Drive, Princeton
NJ 08540, USA

For further information telephone +1 609-799-4449 or visit www.dekra.us/process-safety

A list of nearby recommended accommodation will be supplied upon registration.



SCIENTIFIC UPDATE

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Start 9.00am - Wednesday 9 October

Finish 4.30pm - Friday 11 October

Course Fee: \$2,099

Which includes comprehensive course manual, refreshments throughout the day, and lunch.

Course fee: \$2,099

COURSE TUTORS



Dr Guibing Zhao
DEKRA



Dr Michael Carolan
DEKRA



Dr Will Watson
Scientific Update Ltd



You can find the full tutor biographies on our website.

COURSE OBJECTIVES

- > To train chemists and engineers in efficient methods for developing safe, low cost, robust processes for the manufacturer of fine organic chemicals in the minimum amount of time
- > To improve the awareness of chemists on the principles of scale-up and development, in chemical engineering concepts relating to safe plant operation and in the latest techniques for the optimization of processes
- > To learn from the experience (and mistakes) of others by examining case studies from industry

WHAT WILL ATTENDEES GAIN FROM THE COURSE?

- > The ability to identify any significant sources of hazard in existing processes or development plans
- > An understanding of the latest techniques for assessing risk, and measuring and quantifying chemical process hazards in the work place
- > An understanding of the established best practice to reduce the hazard resulting from exothermic reaction systems with a particular emphasis on emergency relief design

REGISTRATION

You can either use our fast online booking system or mail or fax the attached registration form to:
Scientific Update
Maycroft Place, Stone Cross, Mayfield,
East Sussex, TN20 6EW, UK
Fax Number +44 1435 872734

How to Pay

When you register online, you can have the option to pay via credit card (Mastercard or Visa). A receipted invoice will be automatically generated once paid and sent via email. Should your company wish to pay by cheque or bank transfer bank details will be supplied with an invoice.

Bank Transfer or Cheque

Should your company wish to pay by cheque or bank transfer, on booking you can choose between paying in either €, \$ or £. All bank details will be supplied with an invoice.

Group Discounts

Group discounts are available on two or more attendees - see registration form. This offer only applies if bookings are made simultaneously and from the same billing address.

Confirmation of your registration

These will be sent via email.

Late Applications

For late applications, please register online or fax the completed registration form, including credit card payment information.

Cancellations/Refunds

Should you be unable to attend and cancel in writing no later than 1 month before the start of the course, Scientific Update will refund your registration less £300 (or equivalent in €/)\$ processing fee. Unfortunately refunds are not possible after that date. Substitutions can be made at any time.



October, 9-11, 2019 Princeton, New Jersey, USA

No. of attendees @ \$2,099

Special Offer! Register 2 delegates and receive 5% on 2nd booking
Register 3 delegates and receive 10% on 3rd booking
Register 4 or more delegates and receive a 15% discount

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We accept the following credit cards:



To pay by credit card a secure link will be provided once you receive your booking confirmation email, this will then take you to a secure payment gateway.

*payments via Amex can only be made in US dollars

* Currency Payments

If you select to pay in GBP, or Dollars the amount charged will be based on the exchange rate at the time of preparing the invoice.

Discounts

Complete the details for either two or three delegates and your discount will automatically be applied. This offer only applies where all delegates are booked simultaneously and at the same billing address.

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Data Protection

Scientific Update Ltd is registered under the Data Protection Act 1998. We will store your information securely and only share your contact details with other attendees at this event. If you are happy for your details to be passed to any third parties please tick here:

For full terms of business and payment details please see our website

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