

## SIGNIFICANT ACCIDENTS IN AUGUST - 2020

### Beirut Explosion



The catastrophic explosion at Beirut port on 4<sup>th</sup> August 2020 that has so far killed at least 100+ people and injured around 4,000+, with an unknown number feared trapped under rubble was, according to the government of Lebanon, caused by over 2,700 tonnes of ammonium nitrate kept in storage for over six years.

<https://www.bbc.com/news/explains-53664064>

### Massive Fire Breaks Out At Textile Factory In Gujarat's Sanand



The massive blaze raged on uncontrolled for more than eight hours- destroying the facility, which manufactured products including sanitary napkins, diapers etc.

<https://www.thehindubusinessline.com/news/major-blaze-breaks-out-at-unicharms-sanand-facility/article31904242.ece>



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## EDITORIAL

The Center of Excellence (CoE) in industrial safety is established at SRICT-Ankleshwar, by the congruous collaboration of UPL Ltd. and Gexcon, Norway. The CoE is bracing up to accept challenges for making industrial work-field a safer place, protecting human lives, environment and properties. Zero accident in industries is a reachable target when attitude of caring meets sharing of relevant knowledge.

**SAFEXCELLENCE** is reaching you at a crucial time, when accidents in process plant are on the rise after the lockdown. The newsletter has an aim of not only sharing the occurrences of industrial catastrophes, which fill us with fear and tears but would more like to tell you to focusing care for peers and pare their perils, being a seminal stake-holder of the society.

The Safety Newsletter also attempts to bring in experts from industry, government offices, and academia to share their valuable views on safety aspects, on one platform, aiming to reduce risk and hazards in chemical industries.



We are pleased to present to you the first issue of **SAFEXCELLENCE**. Your views and responses are welcome. Please mail it to [safexcellence@sriect.in](mailto:safexcellence@sriect.in)

**Massive Fire Breaks Out At Chemical Factory In Gujarat's Valsad**



Massive fire was reported at a pharmaceutical company situated in the third phase of Vapi GIDC in Valsad district due to the blast in the chemical solvent drums stored in the manufacturing unit on 8<sup>th</sup> August 2020.

<https://timesofindia.indiatimes.com/city/surat/surat-major-fire-breaks-out-in-a-pharmaceutical-company-no-casualty-reported/articleshow/77430565.cms>

**One Killed, Three Hurt In Oxygen Cylinder Blast In Udhana In Industrial Area**



One person was killed, and three others injured after a cylinder exploded at the oxygen refilling unit in the city's Udhana area on 11<sup>th</sup> August 2020. The unit refills oxygen cylinder used by industrial units and hospitals. The explosion occurred due to heavy pressure generated during refilling of cylinders.

<https://timesofindia.indiatimes.com/city/surat/surat-one-killed-three-hurt-in-oxygen-cylinder-blast-in-udhana-industrial-area/articleshow/77483399.cms>

**Chemical Factory Explosion Kills Six In China**



**BEST WISHES ON CoE INAUGURAL ISSUE**

*"The Center of Excellence (CoE) in Industrial Safety established at SRICT by UPL Ltd in collaboration with Gexcon, Norway is a special endeavour of UPL in the interest of the global technical community. The hazards on the shop floor can only be minimised/avoided through constructive application of the latest knowledge and appropriate use of technology. The CoE, in due course of time, will strut its stuff. I am sure Chemical Industry will welcome "SAFEXCELLENCE", the e-newsletter of the CoE, and would join hands to Make India Safer while Make in India. My Best wishes to SAFEXCELLENCE."*



**Mr. Vikram Shroff (Director, UPL Ltd)**

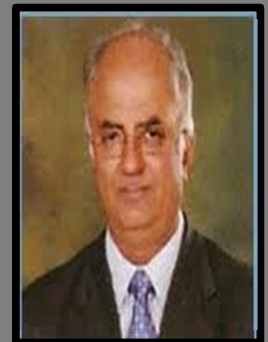


*"This is a broader objective that the country as a whole and other corporates should subscribe to. We should look at developing guidelines in this direction for both corporates including MSME's and engineering institutes and should target to generate at least 100,000 Process Safety specialists in the next 5 years."*

*"The visionary whose inspiration led to birth of this centre of excellence at SRICT."*

**Dr. J. P. Gupta (Chairman EAC-II MOEF&CC Govt. of India)**

*"The Center of Excellence (CoE) in Industrial Safety started at SRICT with the support of UPL Ltd and Gexcon as knowledge partner is an example of confluence of scientific knowledge and its application for human safety, social responsibility of Industry, and a direct service of an academic institute towards industry and the nation both. As a humble Vice Chairman of an academic institute (SRICT), and Executive Director of UPL Limited & Past District Governor of Rotary International, Dist.3060, I send my best wishes to SAFEXCELLENCE – the e-newsletter of CoE."*



**Mr. Ashok Panjwani (Executive Director, UPL Ltd)**

(Contd. From Page 3)

An explosion killed six workers at a chemical plant in Xintao City, China on August 3. The blast in central China's Hubei province happened in a workshop of an organic silicon company and injured four people in addition to the six people killed.

<http://www.hazardonthenet.net/article/180076/Chemical-factory-explosion-kills-six-in-China.aspx>

### Ammonia Gas Leak At Private Dairy Unit In Andhra's Chittoor Injures 20 Women



On 21<sup>st</sup> August More than 15-25 people were rushed to a hospital on Thursday evening after a gas leakage was reported at a dairy plant located at Bandapalli village of Andhra Pradesh's Chittoor district.

<https://www.msn.com/en-in/news/newsindia/ammonia-gas-leak-at-private-dairy-unit-in-andhras-chittoor-injures-20-women/ar-BB18cOIF?li=AAggbRN>

### Two Workers Asphyxiated To Death At Jajmau Tannery



Two civic workers at a leather unit in Jajmau died of asphyxiated while cleaning a septic tank inside its premises on 23<sup>rd</sup> August 2020. The management of Supreme Tannery on outskirts of the city had engaged a team of four civic workers to clean the tank. Moments after entering the tank two of the workers fell unconscious on inhaling the toxic fumes.

[http://timesofindia.indiatimes.com/articleshow/77710396.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/articleshow/77710396.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)



*“UPL has floated a very apt thought of having a process safety risk management system at the design and conceptualization stage of manufacturing. The system, once implemented will see a quantum jump in reduction of chemical industry incidents that we very often hear today and change the perception of this industries.”*

**Prof. G.D. Yadav (Former Vice Chancellor ICT, Mumbai)**

*“I am extremely pleased with and sincerely appreciate the coming together of Indian International Company UPL/Rotary SRICT collaboration with internationally reputed Organization in establishing the pace setting academic programs for enhancing the Process Safety Risk Management in India.”*

**Mr. V V Surya Rau (Chairman-Gexcon Advisory Board & Advisor, RIL)**



*“It is with great pleasure I endorse the first issue of SAFEXCELLENCE, the e-newsletter of the newly formed Center of Excellence in Industrial Safety. Gexcon is proud to be a key participant in this great endeavour, together with SRICT and UPL, and we will do our utmost to make it a success, to contribute to a safer India.”*

**Dr. Jan Roar Bakke (Executive VP, Gexcon AS, Norway)**

*“Gexcon is committed to bring education and research in Process Safety in India. I am sure these issues will be important aspects in Industry 4.0 initiatives. The SRICT CoE Newsletter will play important role to share CoE progress and recent developments. The most important initiative will be to review recent accidents and identify areas of improvement at local, state and national level.”*

**Mr. Rajendra Narkhede (Country Manager, Gexcon India)**



WEBINAR ON  
**MAKE INDIA SAFER WHILE  
MAKE IN INDIA**

TUESDAY 21<sup>st</sup> July 2020  
04:00 PM TO 06:00 PM



PANEL MODERATOR



**Mr. V V Surya Rau**  
Chairman - GEXCON India Advisory Board & Advisor, RIL

EMINENT PANELISTS



**Dr. J P Gupta**  
Chairman EAC-II  
MOEF&CC  
Govt. of India



**Mr. K Venkatramanan**  
Former MD & CEO  
L&T India



**Dr. G D Yadav**  
Former Vice Chancellor  
Institute of Chemical Technology,  
Mumbai



**Mr. P M Shah**  
Director Ind. Safety & Health,  
Govt. of Gujarat



**Dr. Sandip Roy**  
Professor,  
Indian Institute of Technology, Mumbai



**Mr. Vikram Shroff**  
Director, UPL Ltd.



**Dr. Jan Roar Bakke**  
Executive Vice President  
GEXCON AS, Norway

Eminent panelists reflect on various important lessons learnt from spate of incidents in recent past and Way forward for safer management of Hazardous chemicals & Processes. An introduction to Centre of Excellence on Process Safety at Shroff S.R. Rotary Institute of Chemical Technology (SRICT) to cater the need for building process safety capabilities in Indian Chemical Industries.

FOR FURTHER INFORMATION CONTACT US:

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CURTAIN RAISER

**MAKE INDIA SAFER  
WHILE MAKE IN INDIA**

Gexcon has developed first of its kind Centre of Excellence (CoE) in India at Shroff S. R. Rotary Institute of Chemical Technology (SRICT) Ankleshwar, our partner educational institute. Under the CoE, Gexcon AS will support and coordinate with University of Bergen in Norway and develop higher education and research programs in Safety in India. This is expected to open a new domain constituting trained experts in risk assessment and performing consequence analysis using advanced techniques, in the field of process safety.

Process Safety and Risk Management are some of the key drivers, set up by Government of India, to achieve five trillion economy goal. Fortunately, this brings back the focus of academia, industries, policy makers and regulators on this important aspect. Globally it is proven that the learning from accidents helps in prevention of same or similar type of incidents, and also helps in designing safer plants and improving effective consequences mitigation systems. Incidentally, there is no centralized system, like CSB (USA), which documents, investigates and educates about chemical accidents in India to which SRICT is trying to provide alternative at national level. Several Universities/research organizations, abroad, have taken initiatives to develop higher education and research in prevention of accidents.

As a "Curtain Raiser" to the CoE on process safety, a well attended webinar on "MAKE INDIA SAFER, WHILE MAKE IN INDIA" was organised. Eminent professionals presented their papers on the event at Shroff S.R. Institute of Chemical Technology (SRICT).

**PROCESS SAFETY MANAGEMENT TRAINING PROGRAM FOR DISH OFFICIALS BY UK TRAINER**

Day 1

31<sup>st</sup> July



**Hazardous  
Chemicals  
Management  
& PSM**

Day 2

1<sup>st</sup> August



**Ensuring  
Process  
Safety in  
Design- Basic  
Requirement**

Day 3

13<sup>th</sup> August



**Managing  
Hazardous  
Chemical  
Reactions**

Day 4

14<sup>th</sup> August



**Emergency  
Preparedness  
and Response**



**Mr. Gary Pilkington**

(Principal Process  
Safety Engineer  
GEXCON UK LTD)



## GEXCON INDUSTRIAL SAFETY AND RISK ASSESSMENT SOFTWARE

Flame Acceleration Simulator (FLACS) is a commercial Computational Fluid Dynamics (CFD) code developed and marketed by Global Explosion Consultants (GexCon), based in Bergen, Norway. The software has been developed to model the dispersion and combustion of flammable liquids, gases and dust clouds in open and bounded geometries.

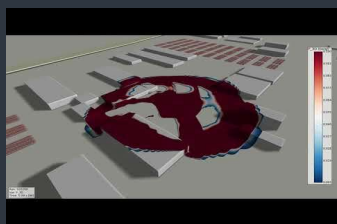
FLACS (Flame Acceleration Simulator) is the industry standard for CFD (Computational Fluid Dynamics) explosion modelling and a comprehensive tool for technical safety issues related flammable and toxic releases.

<https://www.gexcon.com/in/products-services/flacs-software/>

### Beirut Explosion 3D CFD Simulation By GEXCON (FLACS)

Gexcon is a first in the world who developed/resulted blast wave from ammonium nitrate explosion in FLACS 3D CFD tool.

<https://www.youtube.com/watch?v=h1PiKc4BaHo>



## CoE ACTIVITIES

### TRAINING PROGRAM FOR MEMBERS OF CoE BY GEXCON-INDIA FLACS TRAINER

**Introduction:** The course covers the standard modules in FLACS, such as geometry import and generation, gas dispersion, explosion and fire, as well as liquid pool spread. It also comprises presentations on validations, explosion mitigation, QA, and probabilistic risk analysis (Including a FLACS-Risk demonstration). This course combines theory, demonstrations, and practical exercises with FLACS software. Therefore, participants will be required to practice and apply their new knowledge through hands-on exercises. The training program envelops presentations and hands-on training for more than half the time.

**Course Objectives:** The attendees will gain an understanding on the following topics:

- Physical models, applications areas and functionality of FLACS
- FLACS workflow: Preprocessing, processing and postprocessing Guidelines for setting up FLACS simulations
- Quality assurance of FLACS scenarios and results
- Proficiency in using FLACS for standard applications in their projects

### MEMBERS OF CoE, SRICT



(From Left to right)

- ✚ Dr. Omprakash Mahadwad -Professor, SRICT(Coordinator)
- ✚ Dr. Kalpana Rewatkar Yeole – Trainer, Research Scientist, GEXCON India
- ✚ Dr. Ravindra Kanawade – Asso. Professor, SRICT
- ✚ Mr. Amol Lakare – Process Safety Manager, UPL Ltd.
- ✚ Dr. Alok Gautam – Professor, SRICT
- ✚ Dr. Shina Gautam – Asso. Professor, SRICT
- ✚ Mr. Govind Keshavrao Patil – Trainer, Process Safety Engineer GEXCON India

### COORDINATOR OF CoE, UPL Ltd.



**Mr. Piyush Shah**  
(Head-Health & Safety, UPL Ltd.)

### 1 Killed, 4 Injured In Tarapur Chemical Factory



One person died and at least 4 workers sustained serious injuries in an explosion in an organic chemical factory in Tarapur chemical zone in Palghar district on 17<sup>th</sup> August 2020. The blast was believed to have occurred in reactor during a process, shattering the window panes of adjacent pharma company too.

[http://timesofindia.indiatimes.com/article/show/77595847.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://timesofindia.indiatimes.com/article/show/77595847.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

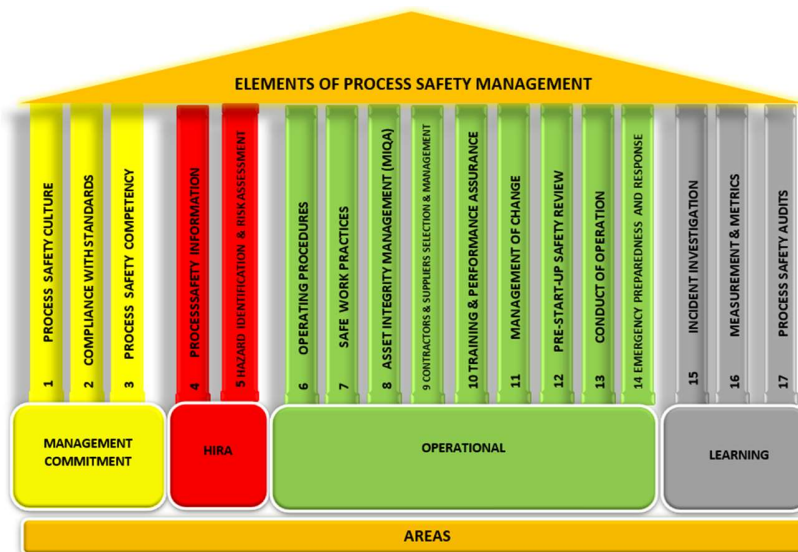
### Yashashvi Rasayan Pvt Ltd -Dahej Fire Incident



Once again fire broke out in Yashashvi Rasayan Chemical company of Dahej on 22<sup>nd</sup> August 2020. Around 35-40 workers sustained burn injuries after the boiler had exploded on 3<sup>rd</sup> June 2020 in the same plant. This time there has been no casualty and the fire department controlled the fire within few minutes. Fire broke out during debris removal operation.

<https://www.livemint.com/news/india/massive-blast-in-gujarat-chemical-factory-around-40-workers-injured-11591181036204.html>

# ELEMENTS OF PROCESS SAFETY MANAGEMENT



Incidents continue to occur in various industries that use highly hazardous chemicals which may be toxic, reactive, flammable, or explosive, or may exhibit a combination of these properties. Regardless of the industry that uses these highly hazardous chemicals, there is a potential for an accidental release any time they are not properly controlled. This, in turn, creates the possibility of disaster.

There are many renowned process safety management systems available worldwide. These systems have most of the safety elements in common, with little variations in number and titles.

SRICT CoE has selected 17 process safety elements and based on these, shall attempt to analyze disaster for the probable cause/s. **SAFEXCELLENCE** team will collate data of major accidents took place during the month and will publish the missing process safety element/s in the news letter.

This baby step taken by SRICT CoE for establishing a data bank of major accidents and subsequent analysis will immensely help our industrial partners to take informed decisions on process safety and achieve zero harm to people, environment and assets and contribute to the larger goal of five trillion economy of our nation.

## MISSING PSM ELEMENTS WHICH CAUSED THE ACCIDENT AUGUST 2020

ACCIDENTS	PSM MISSING ELEMENTS																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Beirut Explosion	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Massive fire -Textile Factory in Gujrat's Sanand	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Massive fire - Chemical Factory in Gujrat's Valsad	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Oxygen Cylinder Blast – Udhana Industrial Area	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Explosion – Chemical Factory in China	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Ammonia gas leak at private dairy unit in Chittoor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Explosion- Tarapur chemical factory	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Massive fire- Yashashvi Rasayan Pvt Ltd -Dahej	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17



# COE WAY FORWARD

## POSITIVE THINGS TOWARDS INDUSTRIAL PROCESS SAFETY IN INDIA - AUGUST – 2020

### Chennai Finally Swung Into Action



After the Beirut explosion, authorities in Chennai finally swung into action. Almost 700 tonnes of ammonium nitrate reportedly transported to Hyderabad. Around 10 containers were transported and security personnel accompanied the trucks. The consignment worth Rs 1.8 crore was kept in a Chennai container freight station.

<https://www.thehindu.com/news/cities/Hyderabad/ammonium-nitrate-from-chennai-ferried-to-hyderabad-after-firm-buys-them-in-e-auction/article32313947.ece>

### India Issues Safety Rules On Restarting Factories After Gas Leak



India has released safety guidelines for restarting manufacturing industries as it partially eases the world's most expansive pandemic lock down and tries to avoid further incidents after a gas leak last week.

<https://www.bloomberquint.com/business/india-issues-safety-rules-on-restarting-factories-after-gas-leak>

#### DEVELOPMENT OF FACULTIES IN PROCESS SAFETY.



#### GEXCON CERTIFIED COURSES

- ✚ DUST EXPLOSION HAZARDS COURSE
- ✚ GAS EXPLOSION HAZARDS COURSE
- ✚ EXPLOSION SCIENCE COURSE
- ✚ PROCESS SAFETY MANAGEMENT COURSES
- ✚ ELECTROSTATIC HAZARDS COURSE
- ✚ HAZARDOUS AREA CLASSIFICATION COURSE
- ✚ MECHANICAL EQUIPMENT TO BE USED IN FLAMMABLE ATMOSPHERES

#### DEVELOPMENT OF MASTER PROGRAM IN PROCESS SAFETY WITH UNIVERSITY OF BERGEN (NORWAY)



#### DEVELOPMENT OF INDUSTRY SPONSORED RESEARCH PROJECTS IN PROCESS SAFETY

#### MAINTAINING DATA BASE OF ACCIDENTS WITH ANALYSIS



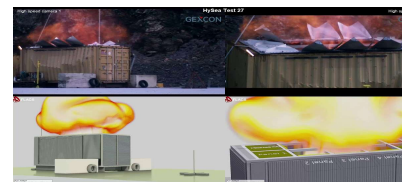
#### ASSISTING INDUSTRIES IN IMPLEMENTATION OF PROCESS SAFETY MANAGEMENT

#### HIGH VALUE LEARNING AUDITS OF ACCIDENTS AND RECOMMENDATIONS



#### DEVELOPMENT OF VIRTUAL REALITY (VR) TRAINING PROGRAMS

#### DEVELOPMENT OF LABORATORY FOR EXPLOSIIVITY TESTING



#### PARTICIPATION IN SAFETY STANDARDS DEVELOPMENT PROCESS



FOR MORE  
INFORMATION  
CONTACT US



(SCAN QR CODE)

## SPECIALIZED SAFETY ASSISTANCE TO INDUSTRIES

PSM CONSULTING ASSIGNMENTS TO MEDIUM/LARGE  
CHEMICAL COMPANIES

PSM TRAINING PROGRAMS TO MEDIUM/LARGE  
CHEMICAL COMPANIES

PREPARATION OF HIGH-CLASS TRAINING VIDEOS, USING  
COMBINATION OF FLACS SOFTWARE, ANIMATIONS AND  
VIRTUAL REALITY, FOR COMPANY SPECIFIC RISK ASSESSMENT

RESEARCH PROJECTS TO LEAD MASTER/Ph. D. FOR SPONSORED  
CANDIDATES FROM COMPANIES/OWNERS

LABORATORY SPECIALIZED SAFETY TESTING SERVICES FOR  
INDUSTRY ORGANIZATIONS

FULL SCALE FIRE/EXPLOSION TESTS FOR INDUSTRY  
ORGANIZATIONS/GOVERNMENTS/VENDORS

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