

# Postgraduate Certificate

## Gas-Related Toxicological Emergencies





## Postgraduate Certificate Gas-Related Toxicological Emergencies

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/medicine/postgraduate-certificate/gas-related-toxicological-emergencies](http://www.techtitute.com/us/medicine/postgraduate-certificate/gas-related-toxicological-emergencies)

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# 01

# Introduction

In the health care setting, the most frequent gas-related toxicological emergencies are those caused by designer drugs, carbon monoxide or cyanide due to domestic misuse, which represent a significant percentage of mortality in relation to other toxic pathologies. In this sense, it is essential that the specialist, who must be up to date with the advances regarding the different toxic substances derived from gases, their clinical manifestations and protocols to be followed according to each case. This is how TECH, at the forefront of digital education, has created this academic program that concentrates all the news related to the subject, 100% online through its secure, modern and intuitive virtual platform and from the hands of the most knowledgeable teachers.





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*This high academic level program is an update on Gas-Related Toxicological Emergencies, and you will obtain it comfortably, safely and with the quality you desire”*

The way in which gases affect the body requires rapid intervention because of the high mortality rate involved. There are different spaces in which gas poisoning can occur, either inside the home, in a car, in the industrial field, and generally its clinical manifestations, due to the collapse of oxygen that occurs in the body, are very decisive for the mode of action of the specialist.

In this Postgraduate Certificate, TECH has chosen a team of experts in Emergency Toxicology to develop the study content. An academic itinerary composed by a syllabus that condenses the advances and latest scientific evidence regarding the protocols of action, diagnosis of suspicion and confirmation, effect of the different types of gases on the respiratory system, among other relevant aspects.

In 6 weeks of 100% online teaching, we will delve into the varieties of possible poisonings, by smoke inhalation, irritant gases, asphyxiating gases such as carbon monoxide or cyanide. It also reviews the sources of exposure, toxicokinetics and pathophysiology in each case.

Thanks to the Relearning methodology and the study modality, the specialist will advance in a progressive and natural way, without complications towards the new academic goal, because they will have the guidance of expert teachers and multiple multimedia resources that will facilitate the task, thus being an excellent opportunity to get up to date about Gas-Related Toxicological Emergencies.

This **Postgraduate Certificate in Gas-Related Toxicological Emergencies** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Toxicology in the Emergency Room
- ♦ The graphic, schematic and eminently practical contents with which it is conceived, collect scientific and practical information on those disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



*After 6 weeks you will be an expert in detecting the clinical manifestations of those patients who come to consult for inhalant poisoning”*

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*You will be able to differentiate the Toxicokinetics of substances for chemical submission”*

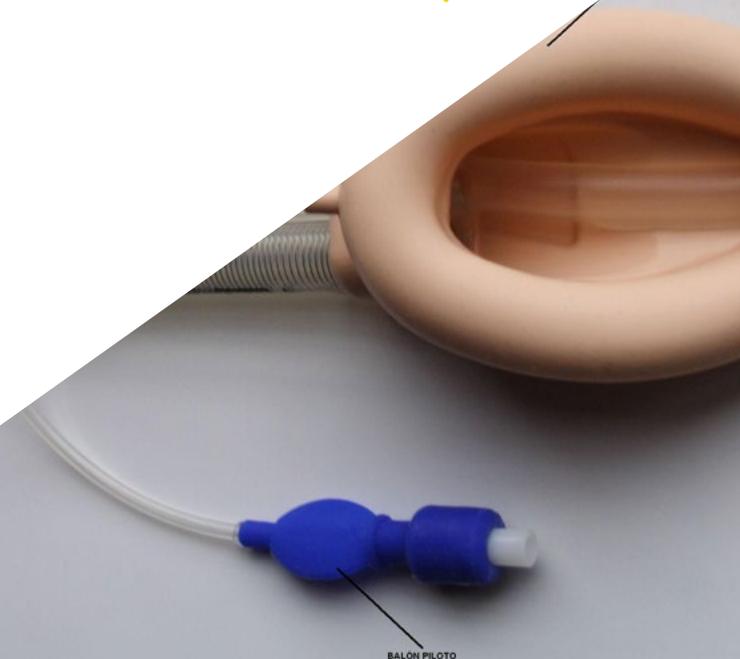
The program includes in its teaching staff professionals from the sector who bring to this program the experience of their work, as well as recognized specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive training programmed to train in real situations.

This program is designed around Problem-Based Learning, whereby students must try to solve the different professional practice situations that arise throughout the program. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.

*You will master the latest protocols for the correct management of Gas-Related Toxicological Emergencies.*

*TECH offers you a new way to get up to date with the most recent advances in Emergency Toxicology 100% online and with the guidance of expert teachers.*



# 02 Objectives

This Postgraduate Certificate in Gas-Related Toxicological Emergencies contains an academic itinerary that will allow the graduate to perform safely and effectively in the area of care. Their skills and competences will be updated at the end of this program, according to the latest scientific evidence and advances in Toxicokinetics, signs, symptoms, diagnostic and therapeutic methods, among other important aspects.





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*You will be able to evaluate the toxicokinetics of various toxic gases, designer drugs, inhalants, ethanol, hallucinogens, among others, and their treatment in case of acute poisoning, after studying this program”*



## General Objectives

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- Define the basic and general principles of care for the severely poisoned patient
- Identify the main toxics available in our environment
- Describe the main signs and symptoms related to severe acute poisoning and its organ involvement
- Implement mechanisms to protect the severely poisoned patients and those around them
- Detect complications related to the related toxicant or to the patient's health status
- Explain the process of care, diagnosis and treatment of the severely poisoned patient in all its dimensions





## Specific Objectives

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- Evaluate the toxicokinetics of phencyclidine, ketamine, amphetamines and designer drugs, inhalants, ethanol, cannabinoids and marijuana, cocaine, hallucinogens and their treatment in case of acute poisoning
- Differentiate the toxicokinetics of substances for chemical submission and the most recent protocols for their correct management



*The most expert teachers in diagnostic and therapeutic methods of Gas Related Toxicological Emergencies have developed all the content of this program. Enroll and get up to date with the best"*

# 03

## Course Management

TECH has selected a team of renowned specialists in the area of Toxicology to integrate the teaching team of this academic program. Professionals of great pedagogical experience who have designed a teaching load according to the objectives pursued and the demands of today's world, based on the latest scientific evidence, which contribute from their own knowledge and research the best content. In this way, the graduate will have an invaluable source of consultation for cases of patients with gas poisoning.





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*You will have the support of the most renowned experts in the area of Toxicology, who are part of the teaching team of this Postgraduate Certificate”*

## Management



### Dr. Álvarez Rodríguez, Cesáreo

- ♦ Emergency Physician Head of the Emergency Unit of Verín Hospital
- ♦ Chairman of the Research and Teaching, Ethics and Medical Records Committee Verín Hospital
- ♦ Coordinator of the Toxicology Working Group of SEMES Galicia
- ♦ Scientific Secretary of the Galician Society of Emergency Medicine (SEMES Galicia)
- ♦ Vice-Secretary for Training of the Spanish Society of Emergency Medicine (SEMES)
- ♦ Director of Doctoral Thesis in the area of Clinical Toxicology (Extraordinary Award)
- ♦ Resident Intern. Virgen de la Concha General Hospital of Zamora
- ♦ Specialist in the Emergency Department Virgen de la Concha General Hospital of Zamora
- ♦ Resident Intern. Professional School of Sports Medicine of the University of Oviedo
- ♦ Primary Care Physician SERGAS
- ♦ PhD in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Degree in Medicine and Surgery from the University of Santiago de Compostela with a Bachelor's Degree in Medicine and Surgery
- ♦ Physical Education and Sports Medicine Professional School of Sports Medicine of the University of Oviedo
- ♦ Research Sufficiency by the University of Salamanca
- ♦ Specialist in Family and Community Medicine
- ♦ Postgraduate Diploma in Health Promotion
- ♦ Advanced Life Support Instructor (American Heart Association Accredited)
- ♦ Member of the Editorial Board of the journal "Emergencias"

## Professors

### Dr. Burillo Putze, Guillermo

- ◆ Specialist in Family and Community Medicine
- ◆ Researcher of the Department of Physical and Pharmacological Medicine of the University of La Laguna
- ◆ Former Coordinator of the Emergency Department of the University Hospital Complex of the Canary Islands
- ◆ Doctor in Medicine and Surgery from the University of La Laguna
- ◆ Postgraduate Diploma in Toxicology by the University of Seville
- ◆ Advanced Life Support Instructor Course of the School of Clinical Toxicology of Washington, USA
- ◆ Member of: European Register of Toxicologists, Spanish Association of Toxicology

### Dr. Bajo Bajo, Angel Ascensiano

- ◆ Hospital Emergency Physician at the University Health Care Complex of Salamanca
- ◆ Associate Professor of Emergency Medicine at the University of Salamanca
- ◆ PhD in Medicine from the University of Salamanca
- ◆ Degree in Medicine and Surgery from the University of Salamanca
- ◆ Certified in Emergency Medicine by the Spanish Society of Emergency Medicine (SEMES)
- ◆ Member of: Clinical Toxicology Section of the Spanish Association of Toxicology (AETOX), Clinical Toxicology Working Group of the Spanish Society of Emergency Medicine (SEMETOX), European Association of Poison Control Centres and Clinical Toxicology (EAPCCT), Founder of the Spanish Foundation of Toxicology (FETOC)

### Mr. Carnero Fernandez, César Antonio

- ◆ Deputy Inspector of National Police
- ◆ Specialist in narcotic poisoning in the TEDAX-NRBQ Unit

### Dr. Giralde Martínez, Patricia

- ◆ Prehospital Emergency Physician in the Galician 061 Health Emergency Service
- ◆ Hospital Emergency Physician at the Montecelo Hospital
- ◆ Postgraduate University Professor in the course "Postgraduate Diploma in Urgencias and Emergencies" of the School of Health Sciences of the Complutense University of Madrid
- ◆ General Vice-Secretary of the Galician Society of Emergency Medicine (SEMES Galicia)
- ◆ Member of Scientific Committee of the XXI Conference on Clinical Toxicology and XI Conference on Toxicovigilance
- ◆ Graduate in Medicine and Surgery from the University of Santiago de Compostela
- ◆ Specialist in Family and Community Medicine
- ◆ Master's Degree in Urgencias, Emergencies and Catastrophes by CEU San Pablo University

**Dr. Miguens Blanco, Iria**

- ♦ Doctor at the Emergency Department of the Gregorio Marañón General University Hospital
- ♦ Specialist in Prehospital Emergency Medicine in the Emergency Service of the Community of Madrid-SUMMA
- ♦ Specialist in Family and Community Medicine
- ♦ Graduate in Medicine and Surgery from the University of Santiago de Compostela
- ♦ Master's Degree in Emergency Medicine from the Complutense University of Madrid
- ♦ Master's Degree in Teaching and Digital Skills in Health Sciences by Cardenal Herrera CEU University
- ♦ Master's Degree in Healthcare Law and Bioethics from the University of Castilla-La Mancha
- ♦ SEMES national board member and director of Mujeres SEMES

**Dr. Mayan Conesa, Plácido**

- ♦ Emergency Coordinator at University Clinical Hospital of Santiago
- ♦ Emergency Physician at the University Hospital Complex of La Coruña
- ♦ Reviewer of the journal Emergencias
- ♦ Teacher of Advanced Life Support
- ♦ Graduate in Medicine and Surgery from the Universidad de Navarra
- ♦ Specialist in Family and Community Medicine
- ♦ Diploma of Advanced Studies from the University of La Coruña
- ♦ Member of SEMES (board of directors)





**Dr. Maza Vera, María Teresa**

- ◆ Undersecretary of Accreditation and Quality of SEMES
- ◆ Specialist in Hospital Emergency Medicine at the Álvaro Cunqueiro Hospital of Vigo
- ◆ Member of the Toxicology Working Group of SEMES Galicia
- ◆ Coordinator of the Scientific Committee of the XXIV Autonomic Congress SEMES Galicia
- ◆ Specialist in Family and Community Medicine
- ◆ Diploma of Advanced Studies in Health Sciences from the University of Vigo

**Mr. Rodríguez Domínguez, José María**

- ◆ TEDAX-NRBQ Specialist in the TEDAX-NRBQ Unit of the National Police
- ◆ TEDAX-NRBQ teacher for national and international organizations
- ◆ Degree in Biology from the University of Santiago de Compostela

**Dr. Suárez Gago, María del Mar**

- ◆ Assistant Physician of the Emergency Department of the Verín Hospital
- ◆ Member of the Toxicology Working Group of SEMES Galicia
- ◆ Specialist in Internal Medicine
- ◆ VMER (Medical Emergency and Resuscitation Vehicle) accreditation of the Training Center of the National Institute of Medical Emergencies of Oporto (INEM)
- ◆ Degree in Medicine and Surgery University of the Basque Country

# 04

## Structure and Content

Keeping up to date with the latest advances and scientific evidence may seem a challenge nowadays, but thanks to TECH's study methodology based on Relearning and the 100% online modality, this Postgraduate Certificate offers the best results in less time. The flexibility of choosing their own training schedule without impositions or unnecessary transfers will allow the student to organize the agenda in a comfortable way. Therefore, they will have 24 hours a day to study the latest scientific evidence about Gas-Related Toxicology from the most reputable teachers.





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*Without strict schedules or unnecessary transfers, with TECH you study at your own pace”*

## Module 1. Industrial Poisoning from Fumes

- 1.1. Effect of Different Types of Gases on the Respiratory System
- 1.2. Poisoning due to Inhalation of Fumes
  - 1.2.1. Preliminary
    - 1.2.1.1. Introduction
    - 1.2.1.2. Index
    - 1.2.1.3. Objective
  - 1.2.2. Mechanisms of Toxicity Production and Airway Damage
  - 1.2.3. Clinical Manifestations
  - 1.2.4. Medical History, Examination and Suspected Diagnosis
  - 1.2.5. Treatment Management
  - 1.2.6. Conclusions and Key Points
- 1.3. Irritant Fume Poisoning
  - 1.3.1. Preliminary
    - 1.3.1.1. Introduction
    - 1.3.1.2. Index
    - 1.3.1.3. Objective
  - 1.3.2. Hydrogen Sulfide Poisoning
    - 1.3.2.1. Sources of Exposure
    - 1.3.2.2. Toxicokinetics and Pathophysiology
    - 1.3.2.3. Clinical Manifestations and Diagnosis
    - 1.3.2.4. Treatment
  - 1.3.3. Fluorine Derivative Poisoning
    - 1.3.3.1. Sources of Exposure
    - 1.3.3.2. Pathophysiology
    - 1.3.3.3. Clinical Manifestations
    - 1.3.3.4. Diagnosis and Treatment
  - 1.3.4. Chlorine Derivative Poisoning
    - 1.3.4.1. General Aspects of Poisoning
  - 1.3.5. Nitrogen Derivative Poisoning
    - 1.3.5.1. Ammonia Poisoning
    - 1.3.5.2. Other Intoxications





- 1.4. Poisoning by Asphyxiating Fumes: Carbon Monoxide
  - 1.4.1. Preliminary
    - 1.4.1.1. Introduction
    - 1.4.1.2. Index
    - 1.4.1.3. Objective
  - 1.4.2. Definition and Causes of Carbon Monoxide Hazards
  - 1.4.3. Epidemiology of Carbon Monoxide Poisoning: A Known and a Hidden Epidemiology
  - 1.4.4. Sources of Carbon Monoxide Exposure and Medical and Legal Causes of Poisoning
  - 1.4.5. Pathophysiology of Carbon Monoxide Poisoning
  - 1.4.6. Clinical Manifestations
  - 1.4.7. Diagnosis of Suspicion and Diagnostic Confirmation. Pulse Oximetry in the Prehospital Setting
  - 1.4.8. Poisoning Severity Criteria
  - 1.4.9. Treatment of Poisoning
  - 1.4.10. Observation, Admission and Discharge Criteria
  - 1.4.11. Conclusions and Key Points
- 1.5. Chemical Asphyxia: Cyanide
  - 1.5.1. Preliminary
    - 1.5.1.1. Introduction
    - 1.5.1.2. Index
    - 1.5.1.3. Objective
  - 1.5.2. Sources of Exposure
  - 1.5.3. Toxicokinetics and Pathophysiology
  - 1.5.4. Clinical Manifestations, Suspicion and Confirmation Diagnosis
  - 1.5.5. Treatment
  - 1.5.6. Conclusions and Key Points

05

# Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.



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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions in the physician's professional practice.

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*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.

*Professionals will learn through real cases and by resolving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*



At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch the videos as many times as you like.



#### Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



06

# Certificate

The Postgraduate Certificate in Gas-Related Toxicological Emergencies guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.





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*Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”*

This **Postgraduate Certificate in Gas-Related Toxicological Emergencies** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Gas-Related Toxicological Emergencies**

Official N° of Hours: **100 h.**



\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development language  
virtual classroom



## Postgraduate Certificate Gas-Related Toxicological Emergencies

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