

# Postgraduate Diploma

## Toxicological Emergencies by Industrial Products



## Postgraduate Diploma Toxicological Emergencies by Industrial Products

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 19 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-toxicological-emergencies-industrial-products](http://www.techtute.com/us/medicine/postgraduate-diploma/postgraduate-diploma-toxicological-emergencies-industrial-products)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 18*

05

Methodology

---

*p. 26*

06

Certificate

---

*p. 34*

# 01

# Introduction

In the workplace, there are many chemical agents that can cause poisoning. According to official records of occupational diseases, 3 out of every 100,000 workers develop illnesses caused by industrial agents each year. Although experts estimate that the figures are not precise, a large number of cases of this type of poisoning are known to occur in emergency departments. In this sense, the specialist must be prepared to attend the patient who presents any sign or symptom of poisoning by substances such as solvents, heavy metals or gas inhalation. For this reason, TECH has designed this academic program from the hands of the most experienced professionals in health and specific areas so that the graduate masters new knowledge and skills that allow them to perform with precision in this area. They will be able to do it 100% online and from the comfort of their favorite device and place.



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*You will be updated on the toxicokinetics of the various toxic agents present in the industrial environment to attend the patient in an adequate way, from the emergency room"*

The number of workers at risk of presenting an occupational poisoning is high, since more than a quarter of them are exposed to chemicals in their workplace and around 17% handle them directly. In this sense, the presentation of the clinical cases of some workers who presented poisonings in relation to their work activity can help to be more aware of this health problem in daily practice, therefore they will be reviewed in this program.

A syllabus that brings together the most updated topics regarding the assessment of the poisoned patient. From the review of toxicology in its historical context, with the use of this type of substances from the Bronze Age to the Contemporary Age. Therefore, the professional will be updated on the diagnostic and therapeutic methods in cases of industrial poisoning by gases, solvents and heavy metals.

The student will be able to understand the different clinical manifestations and the diagnosis of suspicion or confirmation in this type of medical emergencies. From the hand of the most specialized teachers who will provide, from their own experience and the latest scientific evidence, the most relevant examples and contents, to obtain interesting conclusions and aspects to remember in each of the learning modules.

As it is a 100% online program, the professional will be able to define their best study schedule and combine it with their current agenda, without complications. From the comfort of their home or office, from the device of their choice, they can review the videos in detail, complementary readings, Testing and Retesting, quick action guides, among other resources available 24 hours a day for consultation or download. In this way, they will reach their new academic goal in only 6 months.

This **Postgraduate Diploma in Toxicological Emergencies by Industrial Products** 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 practical contents with which they are created, provide scientific and practical information on the 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



*This Postgraduate Diploma will provide you with the most updated content and the most comfortable and safe study methodology. Enroll now and advance"*

“ *You will undertake appropriate procedures according to the patient's clinical history and presenting signs*”

*You will deepen in the diversities of industrial poisoning by gases, solvents or heavy metals.*

*You will master the toxicokinetics of arsenic, lead, iron, taking into account their individualized care.*

The program's teaching staff includes professionals from the sector who contribute their work experience to this program, in addition to renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive education programmed to learn in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that are presented throughout the academic course. For this purpose, the student will be assisted by an innovative interactive video system created by renowned experts.



# 02 Objectives

This Postgraduate Diploma in Toxicological Emergencies by Industrial Products has been elaborated by great experts in the sanitary and pedagogical area, who have structured a series of modules for the complete advancement of the graduate. During their study they will meet several goals that they will achieve without any inconvenience thanks to the most modern methodology in the current educational market: Relearning. In this way, they will obtain a high-level program after 6 months of learning and updating.





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*You will be able to 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”*



## General Objectives

- 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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### Module 1. Introduction

- ♦ Assess the acutely poisoned patient
- ♦ Explain the process of applying life support in the acutely poisoned patient
- ♦ Apply preventive techniques for gastrointestinal absorption
- ♦ Diagnose the alterations of the water and electrolyte balance in the acutely poisoned patient
- ♦ Describe toxicokinetics and its implication for emergency treatment

### Module 2. Assessment of the Poisoned Patient

- ♦ Explain the decontamination procedures in acute dermal poisoning
- ♦ Define the toxicity mechanisms in the men's and female genitourinary tract
- ♦ Identify the effects of xenobiotics
- ♦ Describe the ECG alterations in poisonings that produce cardiac involvement
- ♦ Recognize the possible arrhythmias to be detected in acute poisonings
- ♦ Manage the hematological involvement that occurs in acute poisonings

### Module 3. Industrial Poisoning from Fumes

- ♦ 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

### Module 4. Industrial Poisoning by Solvents

- ♦ Recognize the toxicokinetics of petroleum derivatives, fluorine, hydrofluoric acid, methanol, ethylene glycol and other toxic alcohols and their treatment in case of acute poisoning
- ♦ Interpret the toxicokinetics of asphyxiants and pulmonary irritants, antiseptics, disinfectants and sterilizers, as well as the most effective protocols for their treatment

### Module 5. Industrial Poisoning by Heavy Metals

- ♦ Manage the toxicokinetics of arsenic, lead, iron, taking into account their individualized care
- ♦ Recognize the toxicokinetics of mercury and cyanides, as well as the strategies to prevent the death of the patient and an adequate follow-up of their evolution



*You will never be alone! You will have the support of the most expert teachers in the health and pedagogical areas"*

# 03

## Course Management

Teachers of specialized trajectory in the area of health and pedagogy have poured the greatest knowledge in the content of this program, about the diagnostic and therapeutic procedures of the patient who comes to the Emergency Department for poisoning with industrial products. They will accompany the student throughout the academic journey, through the virtual campus and the variety of materials that have been developed to update the latest scientific evidence on the subject.





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*Throughout the course you will have the support of the most specialized teachers in the subject of study”*

## International Guest Director

Dr. Alan Wu is a true international eminence in the field of Toxicology and Clinical Chemistry. His research has earned him numerous awards and, specifically, he has been recognized as one of the 10 most important people in the world of In Vitro Diagnostic technology (IVD Industry). He also holds the Seligson-Golden Award and has received an award for Outstanding Contributions from the American Association of Clinical Chemistry. He has also been nominated for the Charles C. Shepard Award for Science, Laboratory and Methods (CDC/ATSDR).

This outstanding expert has been closely linked to the Laboratory of Toxicology and Clinical Chemistry of the San Francisco General Hospital, United States, where he has been its director. In this renowned institution he has developed some of his most important studies, among them, his approaches to cardiac biomarkers and point-of-care testing. In addition, he is responsible for the supervision of the staff, the approval of all tests and instruments used in this center and for ensuring compliance with the standards established by the regulatory agencies.

Dr. Wu also maintains a continuous commitment to the dissemination of scientific discoveries and contributions derived from his research. He has authored more than 500 peer-reviewed articles published in leading journals. He has also written 8 pocket books consisting of short stories designed to promote the value of the clinical laboratory to the general public.

As for his academic background, he received his PhD in Analytical Chemistry and completed a postdoctoral fellowship in Clinical Chemistry at Hartford Hospital. He is also certified by the American Board of Clinical Chemistry and is listed as a State Advisor on environmental biomonitoring and chemical-biological terrorism.



## Dr. Wu, Alan

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- ♦ Director of Toxicology and Clinical Chemistry, San Francisco General Hospital, United States
- ♦ Head of the Clinical Pharmacogenomics Laboratory at the University of California San Francisco (UCSF)
- ♦ Professor of Laboratory Medicine at UCSF
- ♦ Director of the Neonatal Screening Program at the Department of Public Health in Richmond
- ♦ Former Director of Clinical Pathology in the Department of Pathology and Laboratory Medicine at Hartford Hospital
- ♦ Medical Advisor to the California State Poison Control Center
- ♦ State Advisor to the Environmental Biomonitoring Committee and the Terrorism Preparedness Committee
- ♦ Advisor to the Clinical Laboratory Standards Institute, Subcommittee on Establishment of Molecular Methods in Clinical Laboratory Settings
- ♦ Editor-in-Chief of the journal *Frontiers in Laboratory Medicine*
- ♦ Bachelor of Science in Chemistry and Biology from Purdue University
- ♦ Ph.D. in Analytical Chemistry from the University of Illinois
- ♦ Postdoctoral Fellow in Clinical Chemistry at Hartford Hospital
- ♦ Member of:
  - ♦ American Association for Clinical Chemistry
  - ♦ International Warfarin Pharmacogenetics Group Warfarin Consortium
  - ♦ International Tamoxifen Pharmacogenetics Consortium
  - ♦ College of American Pathologists, Division of Toxicology Resources



*Thanks to TECH, you will be able to learn with the best professionals in the world"*

## Management



### Dr. Cesáreo Álvarez Rodríguez

- ♦ 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)
- ♦ Scientific Committee of the XXI Conference on Glycinic Toxicology and XI Conference on Toxicovigilance
- ♦ President of the Scientific Committee of the XXV Congress of the Spanish Society of Emergency Medicine (SEMES)
- ♦ Emergency Physician. Head of the Emergency Unit of Verín Hospital
- ♦ Degree in Medicine and Surgery from the University of Santiago de Compostela with a Bachelor's Degree in Medicine and Surgery
- ♦ Research Sufficiency by the University of Salamanca
- ♦ PhD in Medicine and Surgery from the Autonomous University of Madrid
- ♦ Director of Doctoral Thesis in the area of Clinical Toxicology (Extraordinary Award)
- ♦ Member of the Editorial Board of the journal "Emergencias"
- ♦ Specialist in Family and Community Medicine
- ♦ University Expert in Health Promotion
- ♦ Advanced Life Support Instructor (American Heart Association Accredited)



## 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 and 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) and 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

**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

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*Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice”*

# 04

## Structure and Content

The Relearning methodology, implemented by TECH in each of its programs, is the most effective teaching method. This provides flexibility and speed in the assimilation and understanding of the contents. Undoubtedly, the best way to specialize in the hands of the most expert teachers and with the most updated and complete content. It will be 6 months of study in which the graduate will have acquired new skills and abilities to attend the patient poisoned by industrial products, in this way demonstrating new skills and knowledge in the area.





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*This syllabus can be completed  
100% online and in only 6 months"*

## Module 1. Introduction

- 1.1. Introduction
- 1.2. Basic Concepts of Toxicology
  - 1.2.1. Concepts of Toxicology, Poisoning, Toxicants and Toxicity
  - 1.2.2. Clinical Toxicology
    - 1.2.2.1. Types of Toxicity
    - 1.2.2.2. Types of poisoning
    - 1.2.2.3. Dose-Response
    - 1.2.2.4. Causes of poisoning
    - 1.2.2.5. Toxicity Mechanisms
      - 1.2.2.5.1. Toxicokinetics
      - 1.2.2.5.2. Toxicodynamics
- 1.3. Toxicology in its Historical Context
  - 1.3.1. The Use of Poisons in the Bronze Age
  - 1.3.2. Poisoning in Ancient Times
  - 1.3.3. The Middle Ages
  - 1.3.4. The Modern Age
  - 1.3.5. Contemporary Era
- 1.4. Chemistry as a Weapon: The History of Criminal Toxicology
- 1.5. Radiation as a Crime

## Module 2. Assessment of the Poisoned Patient

- 2.1. Introduction to the Module
  - 2.1.1. Medical History
    - 2.1.1.1. Medical History
    - 2.1.1.2. Physical Examination
    - 2.1.1.3. Complementary Evaluations
  - 2.1.2. Toxic Syndromes
    - 2.1.2.1. Sympathomimetics
    - 2.1.2.2. Cholinergic Drugs
    - 2.1.2.3. Anticholinergics
    - 2.1.2.4. Serotonergic Drugs
    - 2.1.2.5. Opioids
    - 2.1.2.6. Sedative-Hypnotic Drugs
    - 2.1.2.7. Hallucinatory Drugs

- 2.1.3. Metabolic Acidosis in Toxicology
- 2.1.4. Diagnosis of Suspected Poisoning and Diagnostic Hypotheses
- 2.1.5. Conclusions and Key Points
- 2.2. Initial Assessment of Patients Suffering from Poisoning
  - 2.2.1. Preliminary
    - 2.2.1.1. Introduction
    - 2.2.1.2. Index
    - 2.2.1.3. Objectives
  - 2.2.2. Hepatic Toxicology
  - 2.2.3. Renal Toxicology
  - 2.2.4. Hematological Toxicity
  - 2.2.5. Neurological and Psychiatric Toxicology
  - 2.2.6. Conclusions and Key Points
  - 2.2.7. Cardiovascular and Respiratory Toxicology
- 2.3. Toxic Organ Involvement
  - 2.3.1. Preliminary
    - 2.3.1.1. Introduction
    - 2.3.1.2. Index
    - 2.3.1.3. Objectives
  - 2.3.2. Reproductive and Perinatal Toxicology
  - 2.3.3. Neonatal and Pediatric Toxicology
  - 2.3.4. Geriatric Toxicology
- 2.4. Group Toxicology



### Module 3. Industrial Poisoning from Fumes

- 3.1. Effect of Different Types of Gases on the Respiratory System
- 3.2. Poisoning due to Inhalation of Fumes
  - 3.2.1. Preliminary
    - 3.2.1.1. Introduction
    - 3.2.1.2. Index
    - 3.2.1.3. Objective
  - 3.2.2. Mechanisms of Toxicity Production and Airway Damage
  - 3.2.3. Clinical Manifestations
  - 3.2.4. Medical History, Examination and Suspected Diagnosis
  - 3.2.5. Treatment Management
  - 3.2.6. Conclusions and Key Points
- 3.3. Irritant Fume Poisoning
  - 3.3.1. Preliminary
    - 3.3.1.1. Introduction
    - 3.3.1.2. Index
    - 3.3.1.3. Objective
  - 3.3.2. Hydrogen Sulfide Poisoning
    - 3.3.2.1. Sources of Exposure
    - 3.3.2.2. Toxicokinetics and Pathophysiology
    - 3.3.2.3. Clinical Manifestations and Diagnosis
    - 3.3.2.4. Treatment
  - 3.3.3. Fluorine Derivative Poisoning
    - 3.3.3.1. Sources of Exposure
    - 3.3.3.2. Pathophysiology
    - 3.3.3.3. Clinical Manifestations
    - 3.3.3.4. Diagnosis and Treatment
  - 3.3.4. Chlorine Derivative Poisoning
    - 3.3.4.1. General Aspects of Poisoning

- 3.3.5. Nitrogen Derivative Poisoning
  - 3.3.5.1. Ammonia Poisoning
  - 3.3.5.2. Other Poisonings
- 3.4. Poisoning by Asphyxiating Fumes: Carbon Monoxide
  - 3.4.1. Preliminary
    - 3.4.1.1. Introduction
    - 3.4.1.2. Index
    - 3.4.1.3. Objective
  - 3.4.2. Definition and Causes of Carbon Monoxide Hazards
  - 3.4.3. Epidemiology of Carbon Monoxide Poisoning: A Known and a Hidden Epidemiology
  - 3.4.4. Sources of Carbon Monoxide Exposure and Medical and Legal Causes of Poisoning
  - 3.4.5. Pathophysiology of Carbon Monoxide Poisoning
  - 3.4.6. Clinical Manifestations
  - 3.4.7. Diagnosis of Suspicion and Diagnostic Confirmation. Pulse Oximetry in the Prehospital Setting
  - 3.4.8. Poisoning Severity Criteria
  - 3.4.9. Treatment of Poisoning
  - 3.4.10. Observation, Admission and Discharge Criteria
  - 3.4.11. Conclusions and Key Points
- 3.5. Chemical Asphyxia: Cyanide
  - 3.5.1. Preliminary
    - 3.5.1.1. Introduction
    - 3.5.1.2. Index
    - 3.5.1.3. Objective
  - 3.5.2. Sources of Exposure
  - 3.5.3. Toxicokinetics and Pathophysiology
  - 3.5.4. Clinical Manifestations, Suspicion and Confirmation Diagnosis
  - 3.5.5. Treatment
  - 3.5.6. Conclusions and Key Points





## Module 4. Industrial Poisoning by Solvents

- 4.1. Introduction to the Module
- 4.2. Hydrocarbon Poisoning
  - 4.2.1. Preliminary
    - 4.2.1.1. Introduction
    - 4.2.1.2. Index
    - 4.2.1.3. Objective
  - 4.2.2. Aliphatic or Linear
    - 4.2.2.1. Short Chain Hydrocarbons: Butane, Propane, Ethane and Methane
    - 4.2.2.2. Long-Chain Hydrocarbons: Pentanes, Hexanes, Heptanes and Octanes
    - 4.2.2.3. Petroleum Distillates: Gasoline, Kerosene, and Others
    - 4.2.2.4. Halogenated Products
    - 4.2.2.5. Carbon Tetrachloride
    - 4.2.2.6. Chloroform
    - 4.2.2.7. Dichloromethane
    - 4.2.2.8. Trichloroethylene
    - 4.2.2.9. Tetrachloroethylene
    - 4.2.2.10. Trichloroethane
  - 4.2.3. Aromatic or Cyclic
    - 4.2.3.1. Benzene
    - 4.2.3.2. Toluene
    - 4.2.3.3. Conclusions and Key Points
- 4.3. Aliphatic Alcohols Poisoning
  - 4.3.1. Preliminary
    - 4.3.1.1. Introduction
    - 4.3.1.2. Index
    - 4.3.1.3. Objective
  - 4.3.2. Methyl Alcohol
  - 4.3.3. Isopropyl Alcohol
  - 4.3.4. Conclusions and Key Points
- 4.4. Glycol Poisoning
  - 4.4.1. Preliminary
    - 4.4.1.1. Introduction
    - 4.4.1.2. Index
    - 4.4.1.3. Objective
  - 4.4.2. Ethylene Glycol
  - 4.4.3. Diethylene Glycol
  - 4.4.4. Propylene Glycol
  - 4.4.5. Conclusions and Key Points
- 4.5. Nitrogen Derivative Poisoning
  - 4.5.1. Preliminary
    - 4.5.1.1. Introduction
    - 4.5.1.2. Index
    - 4.5.1.3. Objective
  - 4.5.2. Aniline
  - 4.5.3. Toluidine
  - 4.5.4. Nitrobenzene
  - 4.5.5. Conclusions and Key Points
- 4.6. Acetone Poisoning
  - 4.6.1. Preliminary
    - 4.6.1.1. Introduction
    - 4.6.1.2. Index
    - 4.6.1.3. Objective
  - 4.6.2. Conclusions and Key Points

## Module 5. Industrial Poisoning by Heavy Metals

- 5.1. Introduction: General Aspects of Heavy Metals and their Main Chelating Agents
- 5.2. Iron Poisoning
  - 5.2.1. Definition, General Aspects
  - 5.2.2. Sources of Exposure
  - 5.2.3. Toxicokinetics and Mechanism of Action
  - 5.2.4. Clinical Manifestations
  - 5.2.5. Diagnosis
  - 5.2.6. Treatment
  - 5.2.7. Conclusions and Key Points
- 5.3. Phosphorus Poisoning
  - 5.3.1. Definition, General Aspects
  - 5.3.2. Sources of Exposure
  - 5.3.3. Toxicokinetics and Mechanism of Action
  - 5.3.4. Clinical Manifestations
  - 5.3.5. Diagnosis
  - 5.3.6. Treatment
  - 5.3.7. Conclusions and Key Points
- 5.4. Lead Poisoning
  - 5.4.1. Definition, General Aspects
  - 5.4.2. Sources of Exposure
  - 5.4.3. Toxicokinetics and Mechanism of Action
  - 5.4.4. Clinical Manifestations
  - 5.4.5. Diagnosis
  - 5.4.6. Treatment
  - 5.4.7. Conclusions and Key Points
- 5.5. Mercury Poisoning
  - 5.5.1. Definition, General Aspects
  - 5.5.2. Sources of Exposure
  - 5.5.3. Toxicokinetics and Mechanism of Action
  - 5.5.4. Clinical Manifestations
  - 5.5.5. Diagnosis
  - 5.5.6. Treatment
  - 5.5.7. Conclusions and Key Points





- 5.6. Arsenic Poisoning
  - 5.6.1. Definition, General Aspects
  - 5.6.2. Sources of Exposure
  - 5.6.3. Toxicokinetics and Mechanism of Action
  - 5.6.4. Clinical Manifestations
  - 5.6.5. Diagnosis
  - 5.6.6. Treatment
  - 5.6.7. Conclusions and Key Points
- 5.7. Cadmium Poisoning
  - 5.7.1. Definition, General Aspects
  - 5.7.2. Sources of Exposure
  - 5.7.3. Toxicokinetics and Mechanism of Action
  - 5.7.4. Clinical Manifestations
  - 5.7.5. Diagnosis
  - 5.7.6. Treatment
  - 5.7.7. Conclusions and Key Points

“ You will have the time you need to study, because the virtual platform will be open 24 hours a day for you and you will be able to access it from any device”

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.





“

*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. Gervas, 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.

“

*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.

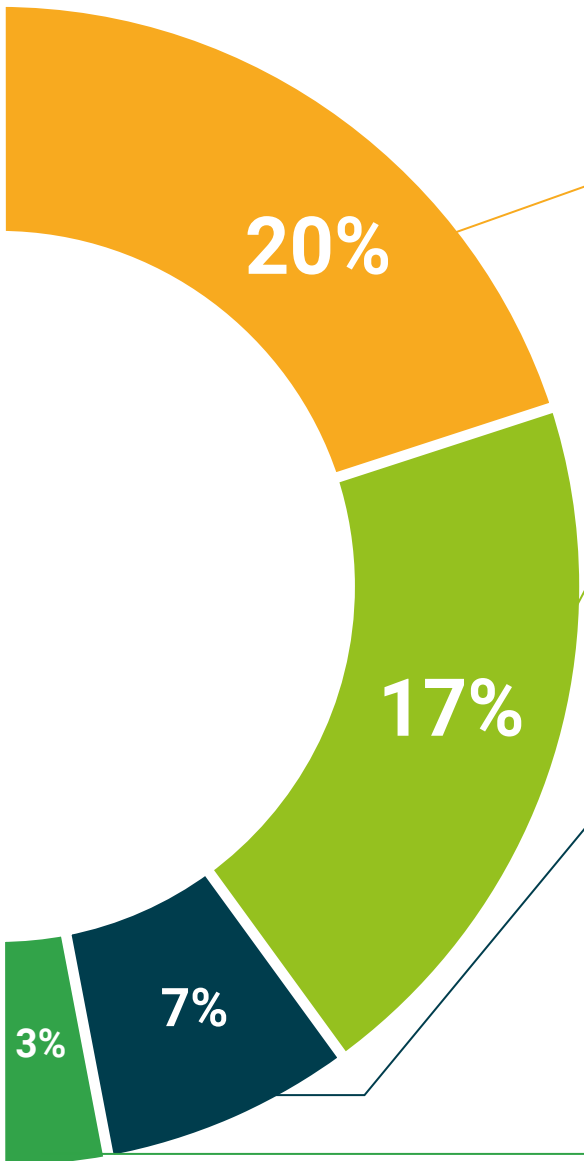
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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 Diploma in Toxicological Emergencies by Industrial Products guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.



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

This private qualification will allow you to obtain a **Postgraduate Diploma in Toxicological Emergencies by Industrial Products** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** private qualification is a European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Toxicological Emergencies by Industrial Products**

Modality: **online**

Duration: **6 months**

Accreditation: **19 ECTS**



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



**Postgraduate Diploma**  
Toxicological Emergencies  
by Industrial Products

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 19 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma

## Toxicological Emergencies by Industrial Products