



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO's E-Learning Courses

Offering new training opportunities to people around the world

How to deal with hydrogen sulphide

The image shows a computer monitor displaying an e-learning course page. The page features the UNIDO logo at the top left. The main title is "How to deal with HYDROGEN SULPHIDE GAS (H₂S)". Below the title, there are four sections: "DANGERS OF H₂S", "CHARACTERISTICS OF H₂S", "SAFETY MEASURES", and "SELF-TEST". To the right of the text, there is an illustration of a person in a hazmat suit working in a confined space, with speech bubbles indicating communication. In the foreground, there is a diamond-shaped hazard symbol with an orange border and a white background, containing a skull and crossbones. Above the symbol is the chemical structure of hydrogen sulphide (H₂S), showing a central sulfur atom (S) bonded to two hydrogen atoms (H).

UNIDO

How to deal with HYDROGEN SULPHIDE GAS (H₂S)

SECTIONS

- DANGERS OF H₂S
- CHARACTERISTICS OF H₂S
- SAFETY MEASURES
- SELF-TEST

H₂S

Background

- ❖ Workers who are exposed to hydrogen sulphide gas (H₂S) present in tanneries and effluent treatment plants (ETPs) can suffer fatal consequences;
- ❖ Growing legal and social pressures mean that all tanners need to be familiar with the main occupational, safety and health protection issues related to tannery operations;
- ❖ Owners and managers of tanneries and ETPs also need to be fully aware of the dangers posed by this poisonous gas and take all preventive and precautionary measures to protect the workforce from exposure to it;
- ❖ In the event of accidental exposure of a worker, they should know how to deal with the situation.



Using innovation to improve and increase learning efficiency

UNIDO has developed innovative e-learning training materials that can be used in different regions around the world. UNIDO's e-learning course on **“How to deal with Hydrogen Sulphide Gas”** is self-study, easy to use, and contains an animated visual training tool.

Why take this course?

- ❖ This online course offers proper training within tanneries related to dangers associated with H₂S;
- ❖ It has been specifically designed to help tanners, tannery managers and operators understand the basic principles of how to deal with hydrogen sulphide gas;
- ❖ The course includes a test; after achieving a minimum score of 80 percent upon completion, participants will receive a certificate.



The course complements **UNIDO's Safety Handbook on "How to deal with hydrogen sulphide gas in tanneries and effluent treatment plants"**, which is also available to download after enrolling on the course.

Dangers of hydrogen sulphide gas

- ❖ Very high levels of exposure to this poisonous gas can result in unconsciousness and instant death;
- ❖ Even at low levels H₂S causes drowsiness, headaches, nausea, damage to the central nervous system, and possible damage to the eyes;
- ❖ H₂S is also flammable and may form an explosive mixture with air.



UNIDO's Safety E-Learning Course on “How to deal with Hydrogen Sulphide Gas”

- ❖ UNIDO is committed to improving occupational safety and health practices in tanneries and ETPs to protect the workforce from exposure to H₂S;
- ❖ UNIDO's e-learning course is helping to raise awareness among tanners, tannery managers, operators and workers about the basic principles of dealing with H₂S and accidental exposure of workers to the gas;
- ❖ Through its animated visual training tool, UNIDO is using the latest technology to improve training efficiency and make the course interesting and engaging.





COURSE CONTENT

1

Dangers of H₂S:

Provides an overview of the health risks and physiological responses associated with the gas.

UNIDO Dangers of H₂S

Case Study

Two tannery workers were exposed to hydrogen sulphide gas after two chemicals were mixed. The workers lost consciousness.

A third man fell unconscious when he attempted to help them. The tannery was evacuated and the unconscious men were rescued by co-workers, who found two breathing masks that enabled them to make it up to the mezzanine.

The workers were sent to hospital and placed into medically induced comas as part of their treatment. They suffered short-term memory loss and temporary loss of sight.

Click on the blue bars to continue with this case study.

Introduction Reflection Solution

2

Characteristics of H₂S:

This section covers risk areas in which hydrogen sulphide can occur, where it can be formed and under which conditions.

UNIDO Characteristics of H₂S

Introduction

Strong, pungent and unpleasant odour is generally felt in and around poorly managed tanneries and effluent treatment plants.

Such odour, though, is not confined to the tanning industry alone. However, it is more associated with tanneries. Much of the **odour is caused by hydrogen sulphide (H₂S) gas**, also known as “stink damp”. The following section will explain the main characteristics of H₂S.

Learning Objectives
After reading through this section you will be able to explain what H₂S is, how it is formed and where it occurs.

3

Safety measures:

- ❖ Learn about preventive measures to decrease the risk of H₂S;
- ❖ Understand how to detect and monitor H₂S exposure;
- ❖ Know how to react to H₂S exposure, including how to use personal safety equipment.

Safety measures

Detect and monitor H₂S
 Before letting any worker (in a tannery or effluent treatment plant) enter risk areas or descend into any tank, pit or such depressed areas, **always** test the area first for the presence of hydrogen sulphide gas.

personal detectors

4

Self-test to practice for the final online test

This course is suitable for self-learning and also for face-to-face learning (classroom training).

Self-Test

Which elements are included in a retrieval system?

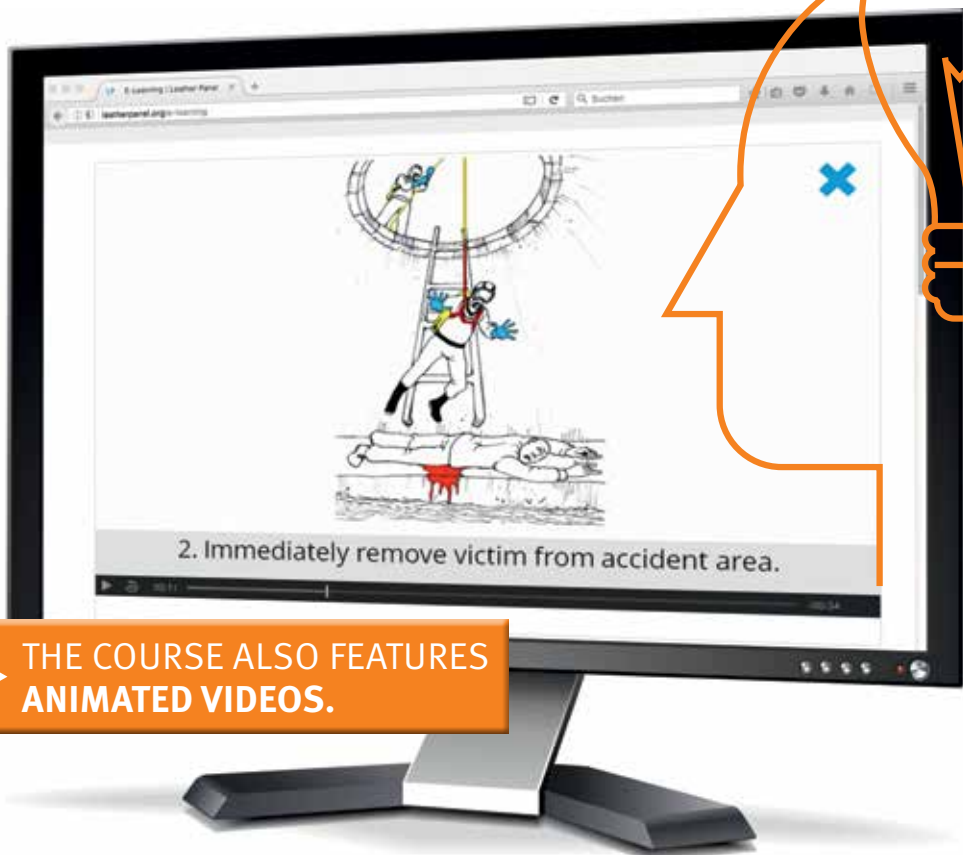
- A man rated winch to be attached to personnel at all times during the descent and work below ground.
- Full Body Harness
- H₂S detector
- Self Contained Breathing Apparatus (SCBA)

SUBMIT

Course benefits

Upon successful completion of the course, participants will:

- Be able to identify H₂S;
- Understand the formation and location of H₂S;
- Be aware of the danger and health effects of H₂S; and
- Know the correct safety measures.





How to enrol on UNIDO's e-learning course on "How to deal with hydrogen sulphide gas"

1

Follow the link: <https://leatherpanel.org/content/unido-line-course-how-deal-hydrogen-sulphide-gas> and click "Create new account", as shown below:

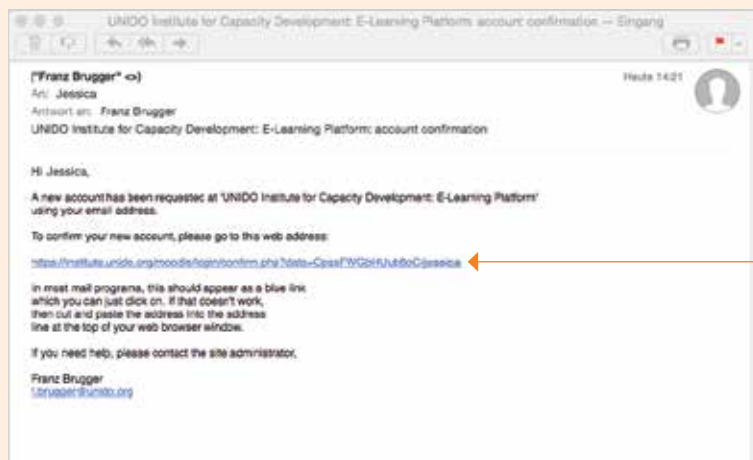
2

Create your own **Personal Username** and **Password** and fill out your personal details, as shown below:



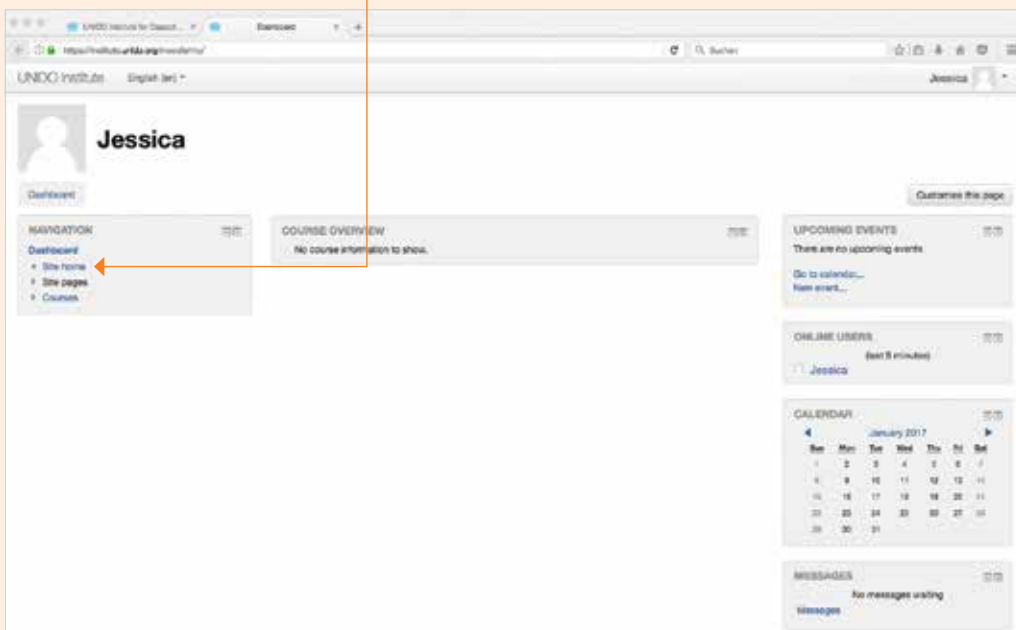
3

Check your emails and click on **the link** provided, as shown below:



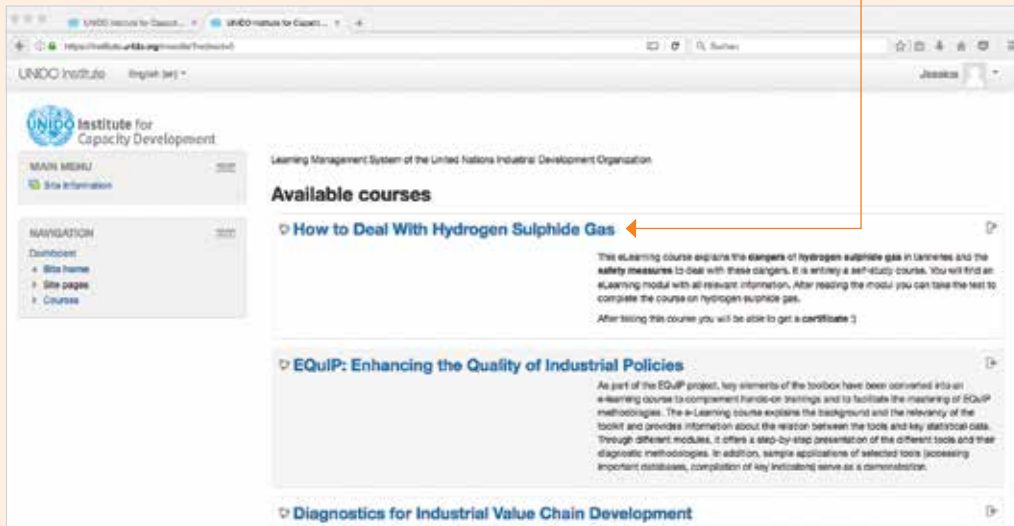
4

Click on **“site home”**, as shown on the top left hand corner of the screenshot below:



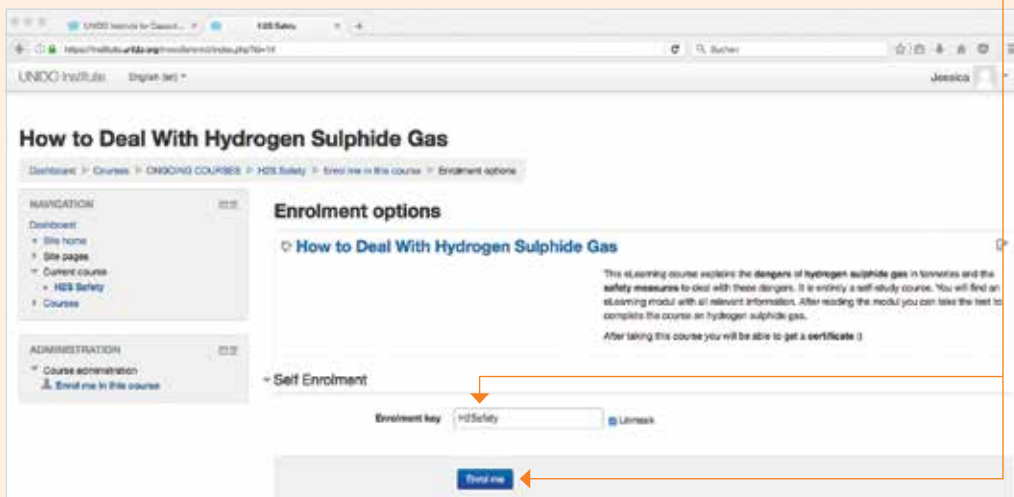
5

Choose “How to Deal with Hydrogen Sulphide Gas” under “Available courses”, as shown below:



6

Enter the enrolment key: **H2Safety** and click “Enrol me”, as shown below:



7

You are now enrolled on the course. Follow the Steps provided, which include: entering your personal data; reading through the e-learning course; downloading UNIDO's booklet on H₂S, as shown below:

The screenshot shows a web browser displaying the UNIDO Institute e-learning course page. The page title is "How to Deal With Hydrogen Sulphide Gas". The main content area is titled "How to deal with HYDROGEN SULPHIDE GAS in tanneries and effluent treatment plants". It includes instructions for users to follow three steps: 1. Provide personal data, 2. Read the e-learning module, and 3. Take a test and answer questions. A progress bar indicates the user's current status. The left sidebar contains navigation options like "Dashboard", "Site home", "Site pages", "Current course", "H2S Safety", "Participants", "Ratings", "General", "Step 2: eLearning Module: How to deal with Hydrogen...", "Step 3: Test", "Certificate", "Discussion Forum", and "My courses". The right sidebar features a search bar, "UPCOMING EVENTS", and "RECENT ACTIVITY".

8

After completing the test, you can download your certificate, as shown below:

The screenshot shows the "Step 3: Test" page. It includes a message: "Please take the test in order to get the certificate. Good luck :)" and a button labeled "Test for Hydrogen Sulphide Gas". Below this, there is a section titled "Certificate" with an arrow pointing left. The text reads: "After finishing the tasks (1. providing the required information regarding your personal data, 2. reading the e-learning module, 3. pass the test) successfully you will receive here your certificate. Click on the certificate to download and/or print it." Below this is a "Certificate" button. A note states: "Not available unless:" followed by a list of conditions:

- The activity eLearning Module: How to deal with Hydrogen Sulphide Gas is marked complete
- The activity Test for Hydrogen Sulphide Gas is marked complete
- The activity Personal Data is marked complete



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