

A photograph of a large industrial facility, possibly a refinery or chemical plant, at night. The scene is illuminated by numerous yellow and orange lights, creating a high-contrast image against the dark blue night sky. The facility features complex piping, scaffolding, and several tall distillation columns. The foreground shows a dark, reflective surface, likely a body of water or a wet pavement, which mirrors the lights from the plant.

HAZOP

by

abhisam

What is HAZOP?

HAZOP is an acronym that stands for

HAZARD and **OPERABILITY** Study

It was pioneered at ICI (Imperial Chemical Industries, UK) during the late 1960s

What is HAZOP?

ICI no longer exists today in its original form today (it was taken over by AkzoNobel)

but the HAZOP technique that it pioneered survives, thrives and grows in importance every day.

HAZOP is mainly a **Risk Assessment** Technique

HAZOP is a **Qualitative** technique

Where is HAZOP used?

HAZOP is used in a wide variety of industries and sectors including but not limited to

- Chemicals & Petrochemicals
- Oil & Gas including refining
- Power Generation
- Mining & Metals
- Pharmaceutical manufacturing

How is HAZOP Structured?

HAZOP is structured in such a way as to evaluate the **design intent** of a particular part of a plant, called as a node and then use **Guide Words** to evaluate **deviations from the intent**

HAZOP Example

For example a HAZOP node may be a day tank that pumps a reactant to the plant every day.

The design intent is “transfer liquid from tank to plant”

Possible Deviations from intent are evaluated using **Guide Words** such as **Less Than, More Than, Reverse, No** and others.

HAZOP Example

Thus possible deviations from the design intent would be

Liquid Quantity transferred is Less than intended

Liquid flows in Reverse direction (from plant to tank)

and so on until all possible deviations are analyzed

HAZOP Example

Now every deviation is analysed and

Mitigated via adequate measures

Mitigations may be multiple for each deviation

All nodes need to be analysed in this manner

HAZOP Types

There are different kinds of HAZOPs

- Conceptual
- Greenfield
- Brownfield
- Decommissioning
- CHAZOP (Computer HAZOP)

HAZOP Team

HAZOP is a team effort with a HAZOP Leader, a HAZOP Scribe who documents the analysis either manually (with an Excel sheet) or using a documentation software and Team members who contribute to the analysis

It is essential that all team members including the leader are adequately trained in the HAZOP technique.

Remember: Garbage In= Garbage Out

If the team is not trained then the HAZOP may have no value, in fact negative value!

HAZOP Training

It is essential that all team members including the leader are adequately trained in the HAZOP technique.

Remember: Garbage In= Garbage Out

If the team is not trained then the HAZOP may have no value, in fact negative value! (because the plant owner is lulled into a false sense of security)

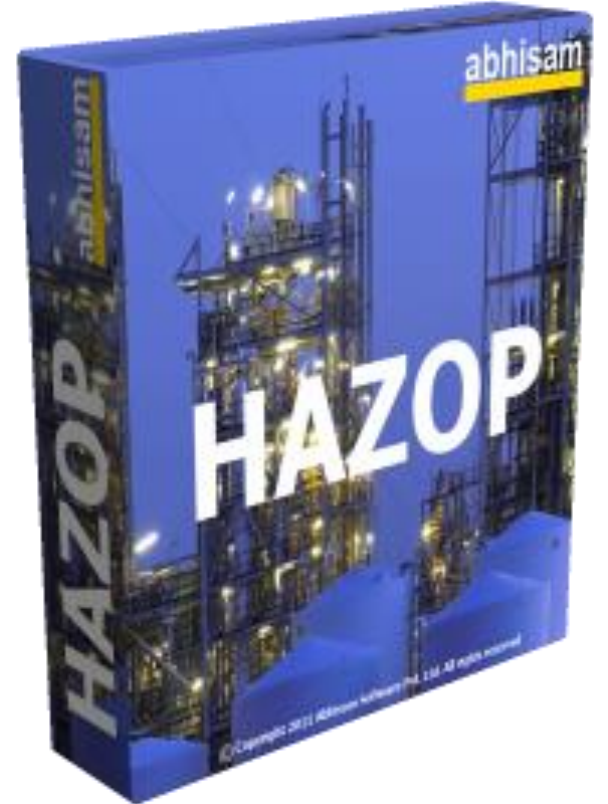
HAZOP Training Questions

- What is the cost of the HAZOP training?
- Can I spare my employees or colleagues for classroom training?
- Can I avoid the classroom training altogether?
- How do I know they learned something?
- Can they prove that they know about HAZOP?

HAZOP Training Answers

One course, the Abhisam HAZOP e-learning course provides a good answer to all your questions

- Saves Time (Can be taken anywhere & anytime)
- Easy to understand (full of animations & simulations, videos, formats, solved examples, case study)



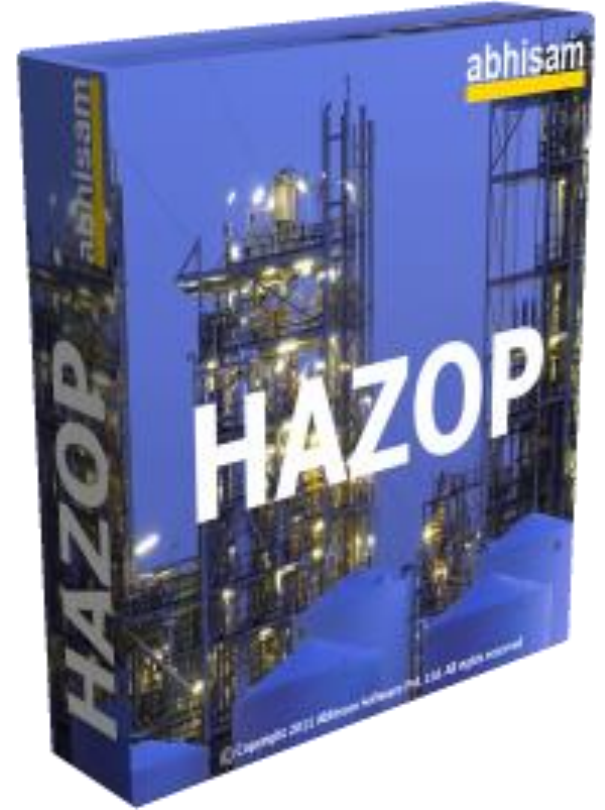
HAZOP Training Answers

Download and Online options available

Can be in the “Cloud”

Integrates with your SCORM Learning Management System

Can support 100s of learners simultaneously if needed



HAZOP Training Answers

Self Assessment tests learner knowledge

Online Exam after course

Certificate on passing (should score > 70%)

Excellent way to train people

Contact sales@abhisam.com to get started today!

