ANSI Z390 (H2S) Standard – It’s Here! Why Not Use It?

Eric Rosemann
The ANSI Z390 (H2S) Training Standard

It’s Here! Why Not Use It?
Educational goals

• Review of training / competency requirements for H2S world-wide

• Review of the elements of ANSI Z390

• Present the professional, ethical and legal arguments for consensus standards like Z390
H2S TRAINING / COMPETENCIES WORLD-WIDE

- OSHA
- TEXAS STATEWIDE RULE 36
- API RP 55 & 49
- CANADIAN “H2S ALIVE”
- OPITO
- ANSI Z390

Eric Rosemann and Associates, LLC  
December 2-3, 2014
H2S TRAINING / COMPETENCIES - OSHA

• No specific training / competencies requirement

• Requires a “Competent Person” for H2S training and other training.

• General Duty Clause used to cite H2S-related incidents
H2S TRAINING / COMPETENCIES - OSHA

“Competent Person” for H2S training and other training:

• As defined by OSHA construction standards (see 29 CFR 1926.32(f)), a competent person is “one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and

• predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and
H2S TRAINING / COMPETENCIES - OSHA

“Competent Person” for H2S training and other training:

• who has the authorization to take prompt corrective measures to eliminate them.”

• Definitive competency requirements for trenching, for example, but not H2S, Forklift, Fall Protection, etc.
H2S TRAINING / COMPETENCIES - OSHA

General Duty Clause used to cite H2S-related incidents

SEC. 5. Duties (a) Each employer --

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
H2S TRAINING / COMPETENCIES - Texas Rule 36

for Oil, Gas or Geothermal Resource Operations in Hydrogen Sulfide Areas
Operator shall train its employees working in H2S areas

Operator shall require service companies to utilize trained personnel actually working on H2S system or well and where such work could allow the escape of H2S gas.

Eric Rosemann and Associates, LLC
H2S TRAINING / COMPETENCIES - Texas Rule 36

Train all personnel in:

• Hazards and Characteristics of H2S
• Safety Precautions
• Equipment – Safety and Support
H2S TRAINING / COMPETENCIES - Texas Rule 36
Train on-site personnel in:

• Effects of H2S on metal

• Corrective actions and shutdown procedures

• Well control – if a drilling operation

• Knowledge of a contingency plan
H2S TRAINING / COMPETENCIES
- API RP 49

Recommended practice for drilling and well servicing operations involving hydrogen sulfide

• Detailed and Definitive on the operations sections similar to Rule 36

• Defines Minimum Training Requirements similar to ANSI Z390 (§5.2)

• Addresses additional training for onsite supervisory personnel (§5.3)
H2S TRAINING / COMPETENCIES
- API RP 49

• Hydrogen Sulfide Safety Instructors are persons that have (§5.4):

  • (a) Successfully completed a course in hydrogen sulfide instructor training: or

  • (b) Received equivalent instruction from a company-designated hydrogen sulfide safety instructor/trainer.
H2S TRAINING / COMPETENCIES
- API RP 49

• A recurring training program shall be implemented to maintain proficiency of all hydrogen sulfide instructors.
H2S TRAINING / COMPETENCIES – API RP 55

Recommended practice for oil and gas producing and gas processing plant operations involving hydrogen sulfide

• Detailed and Definitive on the operations sections similar to API RP 49

• Defines Minimum Training Requirements similar to ANSI Z390 in §5.2

• Addresses additional training for onsite supervisory personnel (§5.3)
H2S TRAINING / COMPETENCIES – API RP 55

• Hydrogen Sulfide Safety Instructors are persons that have (§5.4):

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H2S TRAINING / COMPETENCIES - API RP 55

• A recurring training program shall be implemented to maintain proficiency of all hydrogen sulfide instructors
CANADIAN “H2S ALIVE”

The required training course “H2S Alive” covers everything from understanding the basic properties of hydrogen sulfide gas, to responding and ultimately resolving any potential situations that could develop from an accident or other potentially dangerous incident.
CANADIAN “H2S ALIVE”

In the Canadian petroleum industry, the course is not only required, but it is only valid for up to three years before individuals must take the course again.
There are numerous organizations out there offering “H2S Alive” training courses, and as long as they offer industry certified training (**ENFORM** - The safety association for Canada's upstream oil & gas industry offers such “certification”).

This would be similar to the Association of Energy Service Companies (**AESC**) offering “certification” in the US or **OPITO** in other areas in the world.
O.P.I.T.O.

OFFSHORE PETROLEUM INDUSTRY TRAINING ORGANISATION

- Established in 1991

- OPITO is an Industry-owned not-for-profit organization that exists solely to service the needs of the Oil and Gas Industry.
O.P.I.T.O.

OFFSHORE PETROLEUM INDUSTRY TRAINING ORGANISATION

- Provides training for upstream oil and gas extraction
- Is the training standard for most of the UK, Asia, Middle East and Americas not specified by local regulations
O.P.I.T.O.
OFFSHORE PETROLEUM INDUSTRY TRAINING ORGANISATION

§C.1 Staff - Training staff must be:

• (a) Qualified or experienced in emergency response roles in the event of H2S release

• (b) Trained in instructional techniques and/or have proven training or instructing experience
O.P.I.T.O.
OFFSHORE PETROLEUM INDUSTRY TRAINING ORGANISATION

§C.1 Staff - Training staff must be:

• (c) Included in an ongoing staff training and development programme to enable them to maintain and update skills and knowledge.
§C.1 Staff - Training staff must be:

- Assessors will be discipline experts trained and qualified in assessment techniques.
- All staff will have the appropriate competencies to conduct/assist with the element of training being undertaken.
ANSI Z390.1 - 2006

ACCEPTED PRACTICES FOR HYDROGEN SULFIDE (H2S) TRAINING PROGRAMS

Establishes Comprehensive Training Criteria in greater detail than any other Standard:

3.1 Physical and Chemical Properties of H2S

3.2 Sources of H2S
3.3 Human Physiology and Medical Evaluation

3.4 Work Procedures

3.5 Personal Protective Equipment
3.6 Use of Contingency Plans and Emergency Response

3.7 Burning, Flaring and Venting of H2S

3.8 State and Federal Regulatory Requirements
3.9 H,S Release Dispersion Models

3.10 Rescue Techniques, First Aid and Post-Exposure Evaluation
ANSI Z390.1 - 2006

ACCEPTED PRACTICES FOR HYDROGEN SULFIDE (H2S) TRAINING PROGRAMS

3.11 Methods of Detection and Monitoring

3.12 Engineering Controls

3.13 Transportation of H2S Cargoes

3.14 Emerging Technology
ANSI Z390.1 - 2006

ACCEPTED PRACTICES FOR HYDROGEN SULFIDE (H2S) TRAINING PROGRAMS

INSTRUCTOR QUALIFICATION AND PROFICIENCY

4.1 H2S training instructors/administrators shall have successfully completed an appropriate H2S train-the-trainer development course;
INSTRUCTOR QUALIFICATION AND PROFICIENCY

they shall also be deemed qualified if they possess significant past experience in instructing in this field.
4.1.1 The instructor/administrator shall be able to demonstrate his/her knowledge of the technical aspects of H,S training and proficiency in training techniques relating to H2S.
INSTRUCTOR QUALIFICATION AND PROFICIENCY

Training credentials or certification from a recognized or accredited training authority constitutes qualification under this section.
4.2 Qualified H2S instructors should ensure that the comprehensive outline for their individual course of instruction includes all of the topics covered in this standard.
4.1.1 The instructor/administrator shall be able to demonstrate his/her knowledge of the technical aspects of H2S training and proficiency in training techniques relating to H2S.
4.1.1 Training credentials or certification from a recognized or accredited training authority constitutes qualification under this section.
INSTRUCTOR QUALIFICATION AND PROFICIENCY

4.3 H2S instructors/administrators should conduct a minimum of two H2S training classes each year or more if there is a demonstrated need for additional training.
INSTRUCTOR QUALIFICATION AND PROFICIENCY

4.3 Documentation should be maintained to substantiate evidence of these sessions.

Every three years, instructors should attend an H2S instructor re-fresher course.
Instructor Qualification and Proficiency

4.3.1 The requirements I recommendations in 4.3 permits the instructor to receive the most recent technical information, regulatory changes and updated data on technology advancements…
ANSI Z390.1 - 2006

ACCEPTED PRACTICES FOR HYDROGEN SULFIDE (H2S) TRAINING PROGRAMS

INSTRUCTOR QUALIFICATION AND PROFICIENCY

... including, but not limited to, personal protective equipment, monitoring or detection devices, medical advancements and instructional techniques.
# ET'S COMPARE

**HOW DOES ANSI Z-390 STACK UP AGAINST THE OTHERS?**

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**LEGEND**
- ● WELL DEFINED
- ● REFERENCE TO, BUT NOT DEFINED WELL

December 2-3, 2014
**ET’S COMPARE**

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H2S Training Points Defined

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December 2-3, 2014
SOME FINAL THOUGHTS...
If you have them, why not use the consensus standards?

Civil case law will eventually speak to OSHA’s lack of specific definition

Quality of Instruction defined in ANSI Z390 covers the bases the other standards do not.
The ANSI Z390 (H2S) Training Standard

It’s Here! Why Not Use It?