

ANALYZER SHELTER ENTRY

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HSSE Procedure SH-PR-6
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I. PURPOSE

This procedure addresses the potential atmospheric hazards of analyzer shelter entry; other work hazards are addressed through the permit-to-work system.

Process analyzers are often located inside shelter shelters to ensure adequate performance. Depending upon the type of process analyzer, a shelter may be designed to protect from weather variations (e.g., rain, wind, dust, temperature, and humidity), direct sunlight, excessive vibration, and/or corrosive atmospheres. Since proper monitoring and maintenance of process analyzers and their associated sample systems is essential to reliable operation, shelters are designed for routine personnel access. However, since analyzer shelters are enclosed spaces, leaks or malfunctions could result in an atmospheric hazard.

Continuous safe entry into process analyzer shelters depends on various factors such as the types and quantities of process streams being processed, the location of the analyzer's sample conditioning system (e.g., inside or outside of the shelter), and the design of the shelter's ventilation system (e.g., air changes per hour or exhaust fans).

The potential atmospheric hazards of entering a process analyzer shelter may include:

- Exposure to hydrocarbons; exposure to toxics; or exposure to an oxygen deficient atmosphere.
- Under certain conditions, the maintenance work performed on an analyzer may cause changes in the atmosphere.

II. SCOPE

The procedure applies to all Texas City Site analyzer shelters and to all personnel (BP and contractor).

III. EXCEPTIONS

Only the Texas City Business Unit Leader, the Texas City Process Safety Committee Chair, or their delegates may grant an exception to this procedure. Exceptions must be documented and filed with the HSSE Department.

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IV. GENERAL

- A. Only BP analyzer personnel and those accompanied by analyzer personnel are authorized to enter analyzer shelters. Entry by others (e.g., I/E personnel, HVAC personnel, etc.) must be authorized by the permit-to-work system. The permit-to-work must verify the ventilation system is functioning and adequate, or that appropriate atmospheric tests are made.
- B. The potential atmospheric hazard will be minimized by engineering design (e.g., a ventilation system capable of six (6) air exchanges per hour), or by gas testing prior to and during entry.
- C. The adequacy of the ventilation system will be determined by the Analyzer Department applying the requirements of AMG-4.11.3086. If the ventilation system is not adequate an appropriate warning sign (requiring atmospheric testing) will be posted on the shelter.
- D. The analyzer shelter shall have a sign posted on or near the entry door(s) to warn of the potential for oxygen deficiency, flammable gases, and toxic gases. The sign shall indicate whether the ventilation system (if operating) is adequate for entry, or if gas testing is required for entry. The sign shall also list the safe level for unprotected entry for each of the identified potential hazards (e.g., $LEL \leq 10\%$, $19.5\% \leq O_2 \leq 23.5\%$, $H_2S \leq 10$ ppm, $Bz \leq 1$ ppm, etc.).
- E. Any work to be performed is properly authorized and managed per existing HSSE Procedures.
- F. Process analyzer shelters shall not be used for other operations and maintenance activities (e.g., routine sampling, equipment storage, etc.).

V. ANALYZER TECHNICIAN ENTRY INTO ANALYZER SHELTERS

- A. Verify that the ventilation system (if provided and adequate) is operating. If the ventilation system is operating and is adequate, no further testing is required.
- B. If the ventilation system is not operating (or is not adequate), an individual trained in gas testing shall test the atmosphere for all atmospheric hazards identified for that shelter. Testing shall occur from outside the shelter by inserting the gas test probe through a sample port in the analyzer door or wall. When atmospheric conditions are found to be safe for entry, the instrument shall be placed inside the shelter near the work being performed. The continuous gas test instrument shall have current calibration with capability of monitoring for oxygen deficiency, flammability (LEL), and H₂S (where H₂S may be present). Any instrument alarm (i.e., low battery; pump failure; oxygen deficiency, LEL, or H₂S alarm) requires immediate evacuation of the shelter.

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- C. Required tests include oxygen, LEL, and H2S (where H2S may be present). Analyzer shelters with benzene streams (i.e., ≥ 0.1 volume % benzene) must be tested for benzene.

VI. OPERATOR RESPONSE TO ANALYZER BUILDING ALARMS (if equipped)

- A. Operators should not enter the analyzer shelter in response to an alarm.
- B. Notify shift supervision before approaching the shelter.
- C. View the local indicators on the outside of shelter and take a gas test at the shelter gas test port to determine if the alarm is valid.
- D. If the alarm is valid immediately contact an analyzer technician or analyzer supervisor and notify shift supervision.

VII. REFERENCES

BP Refining, Process Safety Standard No. 18, *Safe Use of Nitrogen*.
 BP Refining, Booklet Ten, *Hazards of Nitrogen and Catalyst Handling*.
 Amoco Petroleum Products, Refining Business Group, Process Safety Standard No. 39, *Process Analyzer Shelter Entry*.
 API 555, "Process Analyzers"
 BP South Houston, SH-ADM-10, *Process Unit / Operating Area Entry*.
 BP South Houston, Analyzer Maintenance Guide 4.11.3086, *Analyzer Shelter Requirements and Routine Maintenance*.

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Revision Log

Revision Date	Authority	Custodian	Revision Details
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