Process Safety Management
Facility Siting and Human Factors Evaluation Checklists

Facility Siting Checklist

Process: _____ **Date Completed:** _____

Checklist Questions	Y	N	N/A	Comments/Recommendations
PROCESS/UNIT ASSESSMENT				
1. Is the equipment generally well instrumented with process alarms?	❑	❑	❑	
2. Are there automatic shutdown systems for major pieces of equipment?	❑	❑	❑	
3. If automatic shutdown systems do not exist, is there an operator in a position to monitor the status of the process at all times?	❑	❑	❑	
4. Are relief systems capable of handling the vapor load generated by exposure fires?	❑	❑	❑	
5. Are major pieces of equipment protected by fixed water spray systems (sprinklers or deluge)?	❑	❑	❑	
6. Have combustible gas detectors been installed at strategic locations?	❑	❑	❑	
7. Are fire monitors capable of reaching all major equipment?	❑	❑	❑	
8. Have adequate evacuation routes been established that account for prevailing wind conditions?	❑	❑	❑	
9. If employees may have to travel through a vapor cloud to evacuate, has respiratory protection been provided for that purpose?	❑	❑	❑	
10. Is it necessary for employees (other than emergency responders) to remain in the area during an emergency to monitor critical equipment or effect safe shutdown?	❑	❑	❑	
11. Are circuit breakers easy to identify?	❑	❑	❑	
12. Can operators safely open circuit breakers? Have they been trained?	❑	❑	❑	
13. Is vehicular traffic appropriately restricted from areas where pedestrians could be injured or equipment damaged?	❑	❑	❑	

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Checklist Questions	Y	N	N/A	Comments/Recommendations
PROCESS/UNIT ASSESSMENT (CONTINUED)				
14. Are the ends of horizontal vessels facing away from personnel areas?	❑	❑	❑	
15. Are vehicle barriers installed to prevent impact to critical equipment adjacent to high traffic areas?	❑	❑	❑	
16. Do drains empty to areas where material cannot pool?	❑	❑	❑	
17. Can dikes hold the capacity of the largest tank?	❑	❑	❑	
18. Is there a means of access in and out of dikes, pits, etc.?	❑	❑	❑	
19. Are emergency eyewash stations/fire extinguishers easily accessible?	❑	❑	❑	
20. Is plant entry/egress secured to prevent unauthorized entry?	❑	❑	❑	
21. Is general lighting sufficient for personnel safety and security?	❑	❑	❑	
22. Is entry to the process area controlled?	❑	❑	❑	
23. Are the inventories for highly hazardous chemicals held to a minimum?	❑	❑	❑	
CONTROL ROOM EVALUATION				
1. Is the control room equipped with positive pressure ventilation?	❑	❑	❑	
2. Is the fresh air intake capable of being shutdown from inside?	❑	❑	❑	
3. Is it possible to seal doors, windows, etc., against infiltration?	❑	❑	❑	

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CONTROL ROOM EVALUATION (CONTINUED)				
4. Is the control room free of windows or other openings (beyond doors) unless specially reinforced?	❑	❑	❑	
5. What is the elevation of intake air?				
6. What is the volume of the control room?				
7. How many people would normally be expected to take shelter in the control room?				
8. What is the distance from the control room to the nearest vent (emergency or otherwise)?				
9. Is the vent above or below the air intake for the control room?				

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Human Factors Checklist

Process: _____ **Date Completed:** _____

Checklist Questions	Y	N	N/A	Comments/Recommendations
Experience/Knowledge:				
1. Are the worker's knowledge, skills, and abilities adequate to perform the job safely?	❑	❑	❑	
2. Are workers knowledgeable of the type and magnitude of the hazards associated with their work?	❑	❑	❑	
3. Do operators have sufficient knowledge to safely operate or shutdown the unit in emergency situations where they must assume manual control?	❑	❑	❑	
Stress/Fatigue/Shift work:				
4. Are emergency procedures presented in a clear, step-by-step format to reduce the "panic" factor during upset situations?	❑	❑	❑	
5. Is the length of a shift during startup and turnaround appropriate given the degree of alertness required and potential for operator fatigue?	❑	❑	❑	
6. Are shift turnover communications sufficient to adequately communicate plant operating conditions (e.g., are communications maintained in an accessible log, is the change period sufficient)?	❑	❑	❑	
7. Are restrictions applied to employee overtime (e.g., employees are not allowed to work more than 16 continuous hours or more than 4 hours adjacent to the last scheduled shift without an 8 hour break)?	❑	❑	❑	
Procedures:				
8. Are operating manuals, product processes and other procedures readily available?	❑	❑	❑	
9. Do written procedures exist for unique or critical operating or maintenance tasks?	❑	❑	❑	
10. Are steps written in clear, concise sentences and easy to follow?	❑	❑	❑	
11. Is all information necessary for performing the procedure included or referenced in the procedure?	❑	❑	❑	
12. Are emergency procedures adequate to ensure proper response during emergency situations?	❑	❑	❑	

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Checklist Questions	Y	N	N/A	Comments/Recommendations
13. Are the procedures consistent with actual operating practices; particularly operating practices responding to emergency or upset conditions?	❑	❑	❑	
Process Design and Labeling:				
14. Are remote startup/shutdown switches clearly labeled and protected from inadvertent operation?	❑	❑	❑	
15. Are the engineering units of similar instruments consistent [*e.g., do rotometers all display flow in either gpm or gph*]?	❑	❑	❑	
16. Are field instrument ranges appropriate for the service [*e.g., avoid using a 0-2500 psig pressure gage on a 100 psig system*] and routinely checked for accuracy?	❑	❑	❑	
17. Is access adequate for routine operating and maintenance of all equipment?	❑	❑	❑	
18. Are operating ranges for process variables specified in the same engineering units as the instrument read-out or indicator (i.e., mental conversion of units is avoided)?	❑	❑	❑	
19. Are all equipment labels (e.g., vessels, piping, valves, instrumentation, etc.) easy to read, clear, in good condition and accurate?	❑	❑	❑	
20. Are all components that are mentioned in procedures (e.g., valves) labeled or otherwise identified?	❑	❑	❑	
21. Do switch labels identify discrete positions (e.g., ON or OFF, OPEN or CLOSE)?	❑	❑	❑	
22. Are signs (e.g., emergency exit, restricted entry, etc.) clearly visible [*consider location and condition*]?	❑	❑	❑	
Control Room/Panel Design:				
23. Are displays of process control instrumentation clearly identified?	❑	❑	❑	
24. If displays are shared with another unit, does it cause any problems at times?	❑	❑	❑	
25. Do the process control system displays adequately present the process information and allow for rapid response to upset situations?	❑	❑	❑	

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Checklist Questions	Y	N	N/A	Comments/Recommendations
26. Are alarms or signals clear and distinguishable?	❑	❑	❑	
Control Room/Panel Design – continued:				
27. Do the process control system displays provide logical feedback (e.g., is 100% valve output equivalent to valve wide open) to operations personnel to confirm operator actions?	❑	❑	❑	
28. Are all controls accessible, distinguishable and easy to use?	❑	❑	❑	
29. When a control action has been made, is there a display to indicate that the required plant change has been made (i.e., it is misleading only to indicate that the control signal has been sent)?	❑	❑	❑	
30. Are emergency shutdown switches guarded against inadvertent operation [*consider location, switch operation, and guards or covers*]?	❑	❑	❑	
31. Are board-mounted shutdown switches or buttons sufficiently distinguishable/separated from alarm acknowledgment buttons to minimize inadvertent operation?	❑	❑	❑	
32. Are emergency isolation valves operable from the control room?	❑	❑	❑	
33. Can the operators or other personnel override automatically activated safeguards? If yes,	❑	❑	❑	
Do(es) the control system(s) have test switch positions which allow bypass of safety features while performing test and calibration tasks? If yes,	❑	❑	❑	
Is there an indication available to the operators which shows that the control system is in a test mode and that the safety features are bypassed?	❑	❑	❑	
Is the test switch position administratively controlled?	❑	❑	❑	
34. Are control system display targets (touch screens) spaced adequately to prevent accidental operation?	❑	❑	❑	
35. Are the control system display symbols consistent and meaningful?	❑	❑	❑	

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Checklist Questions	Y	N	N/A	Comments/Recommendations
36. Do controls agree with strong population stereotypes for color (e.g., red means stop, green means run) and direction of movement (counterclockwise to open), etc.?	❑	❑	❑	
37. Is the cause of "nuisance" alarms (repetitive alarms that operations personnel ignore or acknowledge without investigating) determined and repaired in a timely manner?	❑	❑	❑	
Control Room/Panel Design – continued:				
38. Are equipment "run" indicators (running lights or other process indicators) and valve position indicators provided at a continuously staffed location for critical equipment, valves, and instruments?	❑	❑	❑	
39. Are instruments, displays, and controls promptly repaired after malfunction?	❑	❑	❑	
40. Is sufficient lighting provided in the control room during a loss of power to allow operators to perform emergency actions?	❑	❑	❑	
Safeguards:				
41. Is the location and quantity of personal protective equipment adequate for emergency and routine use?	❑	❑	❑	
42. Are escape routes clearly labeled, lighted, and maintained clear of obstacles?	❑	❑	❑	
Work Environment:				
43. Are the right tools available and used when needed?	❑	❑	❑	
44. Is the lighting adequate in the unit [*consider local instrument panels, battery or plot limit valve manifold locations, equipment and valves requiring operation during emergency conditions, etc.*]?	❑	❑	❑	
Communications:				
45. Is communications equipment adequate for the number of persons or stations who must communicate with each other?	❑	❑	❑	