Process Hazard Analysis Facility Siting Checklist

Facility: _____ Date:

Team Members: _____

Note: For compliance, OSHA expects specific justification for each individual situation/condition.

Item	Question	Answer (Y, N, N/A)	Justification	Recommendations
GENERAL CONSIDERATIONS				
1.	If plant contains flammables above PSM/RMP/CalARP TQ, are they located outdoors to reduce risks?			
2.	Is plant exposed to hazards from neighboring plants?			
3.	Are there detection systems and/or alarms in place to assist in warning neighboring plants and the public if a release occurs?			
4.	Does site security prevent access by unauthorized persons while not hindering emergency services (e.g., fire fighters, paramedics)?			
5.	Are there below-ground-level locations (pits, ditches, sumps) where toxic or flammable materials can collect?			
6.	Are emergency shutdown switch locations protected against potential hazards, in easily accessible locations, and provided with knocking guards?			
7.	Can transportation of hazardous materials or impact of spillage be reduced by suitable site location?			
8.	Other general site concerns (specify)?			
BUILDING PROTECTION				
9.	Is ground or paving sloped so that flammables will not accumulate beneath vessels?			
10.	Could drainage system cope with both storm water and fire fighting water?			
11.	Are structures that are load bearing fireproofed if they are required to support vessels, equipment or pipework carrying flammable, toxic or hazardous materials?			

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12.	Are dikes, berms, barricades or containment systems required to protect personnel and/or equipment against fire, explosion, or toxic exposure?			
13.	• If the answer to the above question is yes, are these systems adequately designed and maintained?			
14.	Are traffic signs/crash barriers/restrictions required to protect against vehicle or other impacts or injuries to personnel in the vicinity?			
15.	• If the answer to the above question is yes, are these systems adequately designed and maintained?			
16.	In the event of an explosion, would fire fighting water remain available?			
17.	Other building protection concerns (specify)?			
PROCESS PROTECTION				
18.	Does the plant meet the requirements of electrical hazardous areas classifications?			
19.	• Is there an electrical classification document(s)?			
20.	• Have significant changes made, since the system was originally constructed, been included in the electrical classification documents?			
21.	Is there adequate protection of piping and vessels from vehicles and forklifts?			
22.	Is there adequate protection of small-bore lines, fittings from external impact, personnel?			
23.	Is process piping, critical controls cable trays, and critical utilities protected against potential hazards?			
24.	Do critical process controls have back-up power supply?			
25.	• Is the back-up power supply available for a sufficient length of time?			
26.	• Is the back-up power supply tested and maintained?			
27.	Other process protection concerns (specify)?			
SPACING				
	Does plant layout:			
28.	• Reduce chances of explosion or fire by minimizing			

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	ignition hazards?			
29.	• Limit the spread of fire or damage caused by flying debris or blast?			
30.	• Allow sufficient access for fire fighting vehicles, equipment and personnel?			
31.	• Minimize effects of fire/explosion on adjacent facilities?			
32.	• Separate continuous ignition sources from potential release sources of flammable materials?			
33.	• Ensure that critical facilities (e.g., fire fighting, manual shutoffs) are not subject to fire, explosion, or toxic cloud?			
34.	Are exothermic reactors located away from key facilities, control rooms, etc.?			
35.	Are control rooms located outside of battery limits and next to an access roadway?			
	Are pumps handling flammables not placed:			
36.	• Immediately beneath pipe racks or access structures?			
37.	• Beneath air/fan exchangers?			
38.	• Beneath drums or exchangers operating at high temperatures?			
39.	Is hazardous material storage area located in a hazardous manner (e.g., uphill of process plant without adequate diking)?			
40.	Have potential risks from pressurized storage (e.g., propane bullets, storage spheres) been assessed to be adequate?			
41.	Have routing of flare headers through hazardous locations been minimized?			
42.	Have the placement of flares been examined for radiant heat effects?			
43.	Is equipment adequately spaced to permit maintenance (e.g., pulling of heat exchanger tube bundles, catalyst removal)?			
44.	Does layout minimize the use of heavy lifting equipment?			
45.	Are pipe configurations that tend to box units in and make them less accessible avoided?			
46.	Are machinery rooms (e.g., ammonia refrigeration) located			

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	adjacent to large populations that could be impacted if there is a chemical release?			
47.	Other spacing concerns (specify)?			
HEALTH AND SAFETY				
48.	Are there at least two separate means of escape for operating personnel from all locations on the plant?			
49.	Are escape route maps showing assembly points posted where personnel can see them?			
50.	Are walkways and access ways wide enough to accommodate response personnel wearing breathing packs (e.g., SCBA)?			
51.	Are emergency showers and eye baths adequate in number and location, and are they functional?			
52.	Is adequate lighting provided for normal and emergency situations?			
53.	Are safety relief valve discharges, vents, and drains located in areas that minimize employee exposure?			
54.	Other health and safety concerns (specify)?			
LOCATION OF BUILDINGS (E.G., CONTROL ROOMS/CRITICAL BUILDINGS, OCCUPIED BUILDINGS/TRAILERS)				
	Could building be impacted by:			
55.	• Vapor cloud explosion from the facility?			
56.	• Pool fire, jet fire, fireball, flash fire from the facility?			
57.	• Toxic release from facility?			
	For buildings subject to potential blast:			
58.	• Is the building built to satisfy current overpressure standards?			
59.	• Is the building designed for blast protection?			
60.	• Is the building outside the likely impact range?			
61.	• Are building windows blast protected?			
62.	• Will the control room remain functional for shutdown purposes?			
63.	• Could internal components fail?			

Item	Question	Answer (Y, N, N/A)	Justification	Recommendations
	For buildings impacted by fire:			
64.	• Are nonflammable construction materials used?			
65.	• Is ground sloped away from building to prevent ingress of burning liquids?			
66.	• Are windows minimized, or can they be, to withstand thermal effects?			
	For buildings subject to potential toxics/asphyxiants including combustion products:			
67.	• Can fresh air intakes be sealed closed in the event of emergency?			
68.	• Are fresh air intakes automated to close in event of toxic material?			
69.	• Are self-contained breathing air packs available to personnel normally within the building?			
70.	• Is the control room built to satisfy current safe haven standards?			
	For occupied buildings/trailers within the footprint of a toxic release from the process:			
71.	• Is the building/trailer under positive pressure?			
72.	• Are the building's/trailer's air intakes located above ground?			
73.	• Does the building/trailer have toxic gas detectors?			
74.	• Do building/trailer occupants have adequate personal protective equipment and training to be able to make a safe escape?			
75.	• If the building/trailer is a shelter-in-place location or safe haven, can HVAC system be quickly shutdown, and the building/trailer sealed?			
76.	Do alternate command centers/control rooms exist?			
77.	Other concerns related to location of buildings (specify)?			

Data sources:

Guidelines for Process Hazards Analysis, Hazards Identification & Risk Analysis, Nigel Hyatt, March 2004
AcuTech Process Risk Management, Siting Checklist
State of Ohio EPA, Siting Checklist
International Institute of Ammonia Refrigeration, Process Safety Management Guidelines