21. PSSR and Plant Check-out prior to introduction of Hazardous Chemicals

Pre-introductory checks defined in this section are based on the Hazard Study 4 system as developed by ICI in the 1960's. These guide words must be considered working in conjunction with the site or client based checking protocol.

Pre-startup Safety Review - Mandates that a safety review for new facilities and significantly modified work sites to confirm that the construction and equipment of a process are in accordance with design specifications; to assure that adequate safety, operating, maintenance and emergency procedures are in place; and to assure process operator training has been completed. Also, for new facilities, the PHA (Process Hazard Analysis) must be performed and recommendations resolved and implemented before start up. Modified facilities must meet management of change requirement.

The above is the guideline from OSHA. Most client operations will have a PSSR procedure in place; however reference should be made to the guidewords found in the document below and implemented to enhance the client PSSR document as required.

PSSR and Plant Check Sheet prior to introduction of Hazardous Chemicals			
Team Members: (Typical listed) Project Manager Mechanical Engineer Electrical Engineer Process Engineer Operations Manager SHE Advisor Commissioning Manager	**Project:**	**Author**	**Date**

No	Section	Guide word	Comments and action	Action On
1	**Visitors**	Procedure for management of visitors in place		
		Warning notices, indication of sign in location clearly identified		
		Required PPE available		
		Plant induction procedure in place		
2 2.1	**General Access** Stairs	Regular risers – especially top and bottom steps.		
		Depth of tread and slope.		
		Continuity of handrails.		
2.2	Fixed Ladders	Rails, guards, access and egress. Are they acceptable?		
		Are self close gates fitted where required		
2.3	Floor and tripping hazards	Unguarded openings in floors. Pipe slots in the floor sealed? Holes for pipes, etc., which require toe rings. Toe boards, handrails, security and continuity.		
		Uneven ground, pipe obstructions at low level		
		Areas susceptible to water pooling		
		Raised anchor bolts		
		Uncovered drains and gullies		
2.4	Headroom	Minimum headroom on walkways and normal operation areas acceptable. Check pipe work and steel bracing.		
2.5	Plant Exits	Are exits marked and adequately lit. Are safety barriers required because of vehicular movements		
2.6	Fire escape and toxic refuge	Are escape routes adequate? Are they marked and well lit Is the safe refuge defined, labeled and communicated		

No	Section	Guide word	Comments and action	Action On
3 3.1	**Access For Operation and Maintenance.** Valves and other operating controls	Are they out of reach – consider emergency and frequency of use? Consider moving, automating or providing access.		
3.2	Instruments points	Accessible for maintenance – consider frequency and urgency that will apply and move or provide access if necessary.		
3.3	Lubrication	If grease nipples are out of reach fit extension pipes.		
		Has all newly installed equipment had an initial charge of lubrication		
		Has a “top-up” routine been established		
3.4	Space for operation and or maintenance	Consider especially maintenance activities they usually require more space than plant operation.		
3.5	Lighting fittings	Can access for maintenance be improved?		
3.6	Road and rail tankers	Access to tanker with handrail protection if operator has to work on tank?		
4 4.1	**Guarding of Machines.** Exposed lengths of revolving shaft	Consider: pump glands, coupling guards, fans and conveyor drives. Are all exposed turning parts covered		
4.2	Belt drives	Are guards adequate – closed – fixed?		
4.3	Inspection openings	Do they give access to moving parts? Are they fixed? Should they be interlocked?		
4.4	Belt conveyors	Guarding of nips, idle rollers. Trip wires, inching operations for maintenance. Guarding for those underneath. Protection from splashing underneath.		
4.5	Charging openings in vessels	Contact with moving parts? Could someone fall in? Is an interlock needed? Should bars be fitted?		
5	**Stopping devices**	A stopping device, suitably located and identified should be adjacent to power driven machines and motors.		
6	**Fragile pipes and vessels**	Are glass or plastic devices protected from damage and labeled? Are protective screens required?		
7	**Hot surfaces**	Are people protected? Do stream traps drain to a safe location?		
8	**Pressure relief.**	Discharge to a safe location? Are they labeled?		

No	Section	Guide word	Comments and action	Action On
9	**Flammables**	Storage, labeling?		
10	**Lifting Beams**	Safe working load marked. Labeled? Registered?		
11	**Overhead, power operated cranes.**	Drivers access to cab and escape routes? Access for maintenance, lubrication? Are travel limit switches required?		
12	**Lighting**	Adequacy? Access for maintenance on plant? Roadways, paths? Emergency lighting operational and adequate?		
13 13.1	**Safety Equipment** Emergency Showers	Labeled, lighting, access, operation, testing, frost protection, bacterial effects		
13.2	Eyewash	Labeling, notices, lighting, cleanliness, auditing?		
13.3	Breathing apparatus	Labeling, notices, lighting, cleanliness, auditing?		
13.4	Other specialized protective equipment.			
13.5	Emergency assembly Point.	Signed communicated and tested? Adequate?		
13.6	Emergency alarm	Audible throughout plant with operations ongoing?		
13.7	Communication	How will this be done during emergencies?		
14	**Fire**	Fire fighting equipment – access – monitoring?		
		Fire alarms adequate labeled, visible?		
		Fire detection – suitable, appropriate?		
		Fire walls, sealing of ducts pipe runs.		
		Fire proofing of steelwork?		
		Access for emergency services?		
15	**Labeling**	Valves, pipelines, fragile equipment, filling connections? Electrical equipment, vessels, pumps, roadways etc.		
16	**Collision damage**	Safety barriers for vulnerable plant and pedestrians?		
17	**Control Room**	Instrumentation clearly labeled? Ventilation and lighting adequate? Have all ergonomic checks been completed? Any alarms and indicator panels correct?		
18	**DCS Control Systems**	All operator interfaces comply with policy and procedures? All ergonomic checks carried out?		

No	Section	Guide word	Comments and action	Action On
19	**Eye Hazards**	Zoned areas marked? Signs in place? PPE available?		
20	**Health**	Ventilation systems (including LEV) – testing – maintenance?		
21	**Safety Information**	Hazard data sheets, Risk assessments available on plant?		
22	**Housekeeping**	All redundant excess material removed from site. Roads/ paths finished to acceptable standard?		
23	**Sampling points**	Location, drainage, grounding? Analytical schedules and laboratory support services?		
24	**Environmental**	Monitoring and sample points set up? Management system in place? Are sample points accessible?		
25	**Outstanding HAZOP actions**	Outstanding actions from previous studies reviewed and signed off?		