

BULK CHEMICAL STORAGE FACILITIES CHECKLIST

A bulk chemical storage facility consists of containers with a capacity more than 450L. These containers may be ISO containers, fixed tanks and **IBC's that are not in storage but are providing chemicals into a process.**

This Checklist is an amalgam of **AS/NZS Standards** such as

- **AS3780: The storage and handling of corrosive substances**
- **AS1940: The storage and handling of flammable and combustible liquids**
- **AS/NZS4081: The storage and handling of liquid and liquefied polyfunctional isocyanates**
- **AS/NZS4452: The storage and handling of toxic substances**

and includes elements of best practice and industry codes. It also includes operability issues often not recognised in the design when operational consultation is not considered.

CLIENT: _____ PROJECT: _____ DATE: _____

DANGEROUS: Y N HAZARDOUS TO HEALTH: Y N HAZARDOUS TO THE ENVIRONMENT: Y N

OTHER - STATE: _____ STANDARD REFERENCE: _____

COMPLIANCE ELEMENT	UNDERSTOOD		RELEVANT		CONTROLS IMPLEMENTED		COMMENT
	YES	NO	YES	NO	YES	NO	
Chemical Regulatory Compliance							
• Are the chemicals dangerous goods?							
• Are they of regulated quantity?							
• Are the chemicals environmentally hazardous?							
• Are they of an environmentally regulated nature?							
• Are the chemicals hazardous substances?							
• Are the chemicals subject to health surveillance or notification?							
• Are the chemicals subject to written advice from a Fire Authority?							
• Is the chemical facility subject to chemical supplier delivery approval?							
Security							
• The storage is to be on a site with a security fence 1.8 metre in height							
• Or .. There is to be a chain wire mesh fully enclosing the storage or							
• Or .. Secure locks on all access and openings to buildings, rooms, compartments or containers or							
• Or .. Continuous supervision							
• PPE must be available in accordance with the MSDS review and workplace assessment							

COMPLIANCE ELEMENT	UNDERSTOOD		RELEVANT		CONTROLS IMPLEMENTED		COMMENT
	YES	NO	YES	NO	YES	NO	
<ul style="list-style-type: none"> A safety shower and eyewash to ANZI 358.1 is to be provided and is not to be less than 7 metres from, and not greater than 2 metres to any transfer point 							
<ul style="list-style-type: none"> Note: 10m distance may be applied when 7m not reasonably practicable by sensible risk assessment in a straight line, no trip hazards 							
<ul style="list-style-type: none"> Note: Jumping in or out of a bund to access a safety shower or eyewash is not compliant (eyewashes and safety showers will be used when sight or physical capability is diminished). Ensure that pipework is lagged or otherwise protected from direct sunlight. 							
<p>Filling of bulk containers</p> <ul style="list-style-type: none"> Hand held hoses are not to be used 							
<ul style="list-style-type: none"> Written filling procedures SOPs, JSAs or SWMSs have to be in place 							
<p>Installation and Location</p> <ul style="list-style-type: none"> Fixed tanks must be on permanent supports 							
<ul style="list-style-type: none"> Demountable tanks must be on stable supports 							
<ul style="list-style-type: none"> Supports are to be corrosion resistant 							
<ul style="list-style-type: none"> Containers must be protected from vehicular damage 							
<ul style="list-style-type: none"> Containers must be separated from others by at least 0.6m 							
<ul style="list-style-type: none"> Lighting is to be provided for inspection and maintenance 							
<p>Transfer System</p> <ul style="list-style-type: none"> A transfer system has to be designed to withstand maximum pressures (pumping!) 							
<ul style="list-style-type: none"> The transfer point has to be securely anchored 							
<ul style="list-style-type: none"> The transfer point must be accessible from outside the bund 							
<ul style="list-style-type: none"> The transfer point must be provided with a quick acting self closing stop valve. Any drain valve arrangement is not to create splashing into the bund 							
<ul style="list-style-type: none"> Back flow or siphoning protection has to be proven or a non return valve provided in the infill pipework 							
<ul style="list-style-type: none"> Safe fill level indication has to be provided (this can be manual and/or procedural) be aware of digital displays in sunlight 							
<ul style="list-style-type: none"> Any sight glass must be protected from damage, and provided with a self closing shut off valve (common non compliance) mechanical or electronic level control is preferable 							

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	YES	NO	YES	NO	YES	NO	
<ul style="list-style-type: none"> The transfer system must be located so that the filling vehicle is not on a public road 							
<ul style="list-style-type: none"> The transfer system must be located so that the filling vehicle is not entering the compound 							
<ul style="list-style-type: none"> The transfer system must be located so that the filling vehicle can be driven out without reversing 							
<p>Spill Collection</p> <ul style="list-style-type: none"> Spills must be retained on the premises (watch for storm water drains / spill retention must also be considered where chemicals are transferred from a bulk tanker or other means. Typically this spill retention should be the largest container on a truck or 9000L whichever is lesser. This spill collection must be provided with a sump (see drainage provision for bund following). Signage for valve status required. 							
<ul style="list-style-type: none"> Entry to and from a compound is to be ergonomically safe – no hoses or other impediments are to be on the floor of the bund 							
<ul style="list-style-type: none"> Any floor grating is to be properly fixed and where valves are to be accessed appropriate grate removal facilities are to be provided 							
<ul style="list-style-type: none"> There has to be a drainage provision for the compound sloping toward a sump with a valve (normally closed) controlling drainage outside the bund clearly marked to open and shut (equivalence to be stated) Note valve handles are not to be in the sump 							
<ul style="list-style-type: none"> Capacity of a spill collection compound has to be the largest container +10%. If containers are interconnected, compound is to be for the total contents 							
<ul style="list-style-type: none"> The spill collection wall and floor must be impervious to the chemical substances (refer MSDS) 							
<ul style="list-style-type: none"> The perimeter of a spill collection compound from container must be sufficient distance to prevent a leak from the surface to outside the bund typically ½ height of tank on flat ground (IBC's in storage must be 1 metre from a bund wall) 							
<ul style="list-style-type: none"> Incompatible chemicals are to be separated by 3m chemicals that will react dangerously require separate compounds and 3m separation 							
<p>Materials, Design, Pipework and ancillaries</p> <ul style="list-style-type: none"> Materials of construction and fittings are to be: <ul style="list-style-type: none"> ⇒ Substantially resistant to corrosion and attack by the product (refer to the MSDS or the technical data) typically a 10 year service life is expected 							
<ul style="list-style-type: none"> A manufacturer must certify the container to the appropriate standards 							
<ul style="list-style-type: none"> Any pressure vessel must be designed to AS1210? (Are they registrable?) 							
<ul style="list-style-type: none"> A steel tank at atmospheric pressure must comply with AS1692, API650 or API620 							

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	YES	NO	YES	NO	YES	NO	
<ul style="list-style-type: none"> A glass fibre reinforced tank at atmospheric pressure must comply with AS2634 							
<ul style="list-style-type: none"> A rotationally moulded tank for operations at atmospheric pressure must be designed and constructed to ASTM D 1998 							
<p>Ancillaries and Fittings</p> <ul style="list-style-type: none"> A container must be provided with vents (for some products e.g. Diisocyanates strong acids and alkalis. Vapours may have to be scrubbed before expulsion to atmosphere – for diisocyanates refer to the referenced standards. For acids/alkalis/amines EPA or other regulatory advice might be required. See also “venting” following) Note: That any fittings provided on tanks are to place in an ergonomically safe position 							
<ul style="list-style-type: none"> Container openings through which liquid is filled should be provided with internal projections or other arrangements to prevent splashing and corrosive material running down the side of tanks 							
<ul style="list-style-type: none"> For products that are likely to become thickened or viscous agitators or other remedial devices are to be provided. 							
<ul style="list-style-type: none"> A shut off, quick acting, valve shall be provided at each transfer point into and from a container 							
<ul style="list-style-type: none"> Pipes and valves are to be immune to corrosion or attack by the chemical. (refer to MSDS or technical data) 							
<ul style="list-style-type: none"> All pipework is to be well supported and protected from damage 							
<ul style="list-style-type: none"> All valve lubricants are to be compatible with the chemical stored and handled 							
<ul style="list-style-type: none"> Flexible hoses are to be only used at transfer points (typically a transfer point is considered to be at a container filling point or between pumps to act as a damper) – chemical reticulation into processes should be by fixed pipework. Flexible hoses are not to be on bund floors. 							
<ul style="list-style-type: none"> Flexible hoses are to be designed to withstand normal operating pressures 							
<ul style="list-style-type: none"> Shut off valves are to be provided on fixed pipework at both ends 							
<ul style="list-style-type: none"> All joints in fixed pipework are to be welded or flanged Note: Hose clip screw type fittings are not generally acceptable particularly at pumps - vibration will loosen. 							
<ul style="list-style-type: none"> All pipework is to be colour coded with direction of flow indicated 							
<ul style="list-style-type: none"> If pumps are installed in the spill compound they must be elevated above the level of spill or protected by a liquid tight wall. A means for controlling the pump from outside the compound is required 							

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<ul style="list-style-type: none"> Note: Dosing pumps and calibration pumps should not be placed in a compound where operations and maintenance cannot be accomplished from outside the bund. 							
<ul style="list-style-type: none"> All pumps are to have an opaque protection barrier 							
<ul style="list-style-type: none"> All electrics are to be to AS/NZS3000 (watch the IP rating) 							
<ul style="list-style-type: none"> Electrics and telemetry are to be protected from any corrosive atmosphere (sealed containment) 							
<p>Venting</p> <ul style="list-style-type: none"> Portable bulk containers (IBC's) will have their venting provisions operable at all times. The MSDS review and workplace assessment will determine the need for dedicated vent lines or other ventilation requirements. 							
<ul style="list-style-type: none"> Vents must be protected from ingress of insects and dirt 							
<p>Overfill Protection</p> <ul style="list-style-type: none"> Fixed tanks must have an overfill line discharging at ground level into the bund and be 1.5 times diameter of infill pipework. IBC's do not have to have this requirement if not filled in situ. 							
<ul style="list-style-type: none"> The overflow outlet must be in direct line of sight of the operator 							
<ul style="list-style-type: none"> There must be no restriction to flow in the overflow line. 							
<p>Signage</p> <ul style="list-style-type: none"> Placarding is to be provided in accordance with regulatory requirements 							
<ul style="list-style-type: none"> Safety signage is to be provided 							
<ul style="list-style-type: none"> Spill control signage is to be provided 							