

Standard Operating Procedure - Receiving Bulk Chemical Deliveries

1. PURPOSE

- 1.1. To ensure the health and safety of Shoalhaven Water workers, associated workers and contractors of the Standard Operating Procedure - Receiving Bulk Chemical Deliveries at all Shoalhaven Water sites.
- 1.2. To provide simple instructions of the requirements when receiving Bulk Chemicals at all Shoalhaven Water sites.
- 1.3. To meet the EPA requirements of the POEO Act

2. RELATED DOCUMENTS

- 2.1. P12 Managing Plant
- 2.2. P09 Safety Training
- 2.3. P10 Risk Management
- 2.4. P28 Energy Isolation
- 2.5. Relevant SWI's & SOP's
- 2.6. AS1940:2017 & AS3780-2008
- 2.7. POEO Act 1997 (Meet EPA requirements)

3. RESOURCES REQUIRED

- 3.1. PPE
- 3.2. Connection hoses
- 3.3. Valve handle/key may be required

4. DESCRIPTION

- 4.1. All workers together on-site must complete the Works Online Site Specific Risk Assessment including documenting hazards identified and control measures taken.
- 4.2. The Site Specific Risk Assessment is to be completed at the start of the job with subsequent risk assessments completed if the work activity and/or the method used, conditions or workers change.
- 4.3. All Shoalhaven Water sites with stored Bulk Chemicals and dosing systems must be documented in the hazardous substance register. The Hazardous substance/Dangerous goods register, SDS's and Site Emergency Plan must be present in the Gate Manifest.
- 4.4. All delivery drivers must sign in and QR Code "Check In" at site.
- 4.5. All delivery drivers must notify the site Operator in Charge of the bulk chemical delivery and quantity being unloaded. Shoalhaven Water staff are to be in attendance during the unloading/transfer of the Bulk Chemicals to the storage vessel/s.

- 4.6. The site Operator should ensure the delivery truck driver is directed to the correct bulk chemical storage vessel that requires filling. This is essential for sites that have multiple storage vessels of the same chemical.
- 4.7. All new drivers must be inducted at site and induction recorded.
- 4.8. Ensure all applicable Safety Shower/Eyewash units are tested and operational.
- 4.9. Transfer hoses used must be visually examined for kinks, wear or any damage. Couplings and seals should be similarly examined to ensure compatibility, gasket condition and for any presence of dirt etc. before connection.
- 4.10. Check integrity of any onsite associated transfer hoses and pipework.
- 4.11. Ensure that any bund valve/s associated with the delivery or storage of Bulk Liquid Chemicals are closed at all times. **Note: The only exception is for supervised draining of clear stormwater from the bund area (refer to SOP-PRD20/188)**
- 4.12. Spill kits must kept on site for accidental spills outside of the transfer bund area
- 4.13. The Bulk Chemical must not be transferred from the delivery truck unless it can be driven away in a forward direction or if it is not reasonably practicable to drive the vehicle in a forward direction owing to the layout of the site, that it can be driven away with minimal manoeuvring.
- 4.14. The delivery truck transporting the load of bulk chemicals must carry suitable fire extinguisher/s readily accessible
- 4.15. PPE and safety equipment based on the classification of the bulk chemical, must be carried in the delivery truck and worn by person/s during the transfer operation.
- 4.16. Shoalhaven Water staff are to collect any applicable associated delivery dockets from the Bulk Chemical delivery truck driver – Delivery docket, specific gravity & weighbridge dockets, Certificate of Conformance.
- 4.17. **Note:** All Bulk Chemical delivery truck drivers will be directed by their company instructions for the unloading/transfer of chemicals but must also adhere to Shoalhaven Water description & guidelines contained in **SOP-21/124**

5. GUIDELINES for TRUCK TRANSFER/UNLOADING of BULK CHEMICALS

- 5.1. The delivery truck must park inside the designated bunded area at all times during unloading/transfer of chemicals to the chemical storage tank/s.
- 5.2. The truck unloading bund must drain into the sewage/water treatment network not to the stormwater drain. It must have a sump pump or manual valve to return any spilt chemicals to the treatment plant at a controlled rate determined by the Operator.
- 5.3. Emergency Safety shower/eyewash units must be in accessible location/s close to the chemical storage area with no more than 10 seconds to be reached.
- 5.4. The chemical unloading connection point/s must be located within the tank bund, so that any spills connecting/disconnecting the delivery hose, drain into the tank bund.
- 5.5. The truck delivery/unloading hose must be a maximum of 6m long and inspected regular for integrity. The hose safety lines must be attached at bulk storage and truck ends.
- 5.6. A hose used in connection with a transfer operation should be handled so as to avoid excessive curvature, stress, abrasion or kinking that may damage the hose or its connections
- 5.7. The driver must remain at the truck during the transfer operation to observe all relevant fittings, hose connections and gauges in case of any problems or issues.

- 5.8. The driver must have access to all equipment necessary to stop the transfer operation in the event of an escape, leak or spill.
- 5.9. Dangerous goods must not be transferred into or out of a road vehicle, while the cabin of the vehicle is occupied.
- 5.10. The delivery truck driver must confirm the amount delivered/transferred is correct and the storage vessel is full.
- 5.11. Before transfer of bulk chemicals (Classes 2.1, 2.2, 2.3, 3.0), the delivery truck must be electrically bonded to the bulk storage receptacle
- 5.12. During the transfer of **dry chemical** (powder), the following should be observed:
 - Careful and timely operation of the regulating valves by the driver is critical for efficient product transfer.
 - With proper aeration, the powder will be suitably fluidised, allowing rapid transfer into the silo without the need to use excessive pressure.
 - Careful airflow regulation is particularly critical as the tanker approaches empty, when low powder density and the potentially large volume of pressurised air remaining in the tanker can cause a surge of air into the silo, greatly increasing the risk of over-pressurisation.
 - To avoid this problem tanker pressure is gradually reduced by the driver as the tanker contents are emptied.
- 5.13. **Note:** All Bulk Chemical delivery truck drivers will be directed by their company instructions for the unloading/transfer of chemicals but must also adhere to Shoalhaven Water description & guidelines contained in **SOP-21/124**

6. BULK LIQUID CHEMICAL DELIVERIES

- 6.1. Refer to all points 5.1. to 5.10. & 5.13.
- 6.2. Ensure the correct strength/percentage of the delivered Bulk Chemical matches the on site stored Bulk Chemical before transferring.

7. BULK DRY CHEMICAL DELIVERIES

- 7.1. The bulk chemical delivery driver will confirm product/chemical type, quantity and silo destination with the Plant Operator before positioning the tanker for discharge.
- 7.2. After unlocking the designated silo fill pipe and checking the integrity of the flexible connecting hose/seals and "Camlock" fittings, the driver connects up to the silo fill pipe
- 7.3. Ensure the hose is in contact with the ground or as close to as possible and couple the hose safety strap after confirming that the product will be delivered into the correct silo.
- 7.4. The driver then checks the silo high level alarm function before starting the silo dust filter, which also opens the interlocked silo fill valve and permits dry chemical transfer to occur.
- 7.5. The driver starts the truck-mounted compressor, adjusts the airflow pressure and distribution so that the product in the tanker is first fluidised and then transported under pressure through the discharge pipeline into the receiving silo (bulk storage)
- 7.6. As the compressed air enters the silo and expands, the powder falls into the silo while the transport air is filtered of any entrained dust by the dust filter and the cleaned air is released to the atmosphere through the vent pipe.

- 7.7. To ensure dust emissions are minimised, the collected dust is automatically cleaned from the filter bags at regular intervals and returned to the silo.
- 7.8. Frequent removal of the dust from the filters also helps ensure the large volumes of transport air pumped into the silo can be rapidly vented, minimising the risk of silo over-pressurisation and subsequent damage to equipment or injury to personnel.
- 7.9. During the unloading process, the driver will continually monitor equipment operation and ensures pressures are kept within the required range, and any potential problems are identified and immediately addressed.
- 7.10. **Note:** *While discharging the fill hose frequently kicks - no one should step on or over the hose whilst pressurized and maintain a suitable distance to ensure the hose does not come in contact with any body part.*
- 7.11. When the tanker has been emptied, the driver shuts off the compressor, carefully vents any excess pressure from the tanker and closes the silo fill valve.
- 7.12. The connection/delivery hose is removed and stored and any spills are cleaned up before the driver closes off the silo and finalises the associated delivery documentation.

8. BULK GAS CHEMICAL DELIVERIES

Liquefied Oxygen

- 8.1. During the operation of transferring **Liquefied Oxygen** from a road vehicle/tanker, all surfaces within a distance of 1 metre of the transfer/delivery hose must be made of concrete or other non-combustible materials.
- 8.2. During the operation of transferring **Liquefied Oxygen**, a person capable of using the transfer equipment must remain at the vehicle and another person capable of using the transfer equipment must remain at the storage container.
- 8.3. The purging procedure and disconnection of hoses is very important to prevent formation of dry ice plugs at **Liquefied Oxygen** and **CO₂** Plants.

Liquefied Petroleum Gas

- 8.4. For delivery of **Liquefied Petroleum Gas** the following instructions must be adhered to:
 - The bulk storage tank/s location should be accessible to vehicle delivery. It should avoid routing such that the filling hose has to pass over walls or fences or similar features that are likely to cause abrasion or other damages to the hose.
 - The location should provide a clear line of sight between the receiving tank and delivery vehicle for the person in control of the product transfer operation particularly if only a single person is involved in the transfer operation.
 - The vehicle should be provided with the means for automatic immobilization while the delivery hoses are still connected and the cabinet remains open. This can be achieved with a brake interlock that ensures the vehicle cannot move unless the hoses are correctly stowed on the vehicle.
 - Before LP Gas is transferred from the delivery truck, the supplying receptacle must be electrically bonded to the receiving receptacle in accordance with AS/NZS 1596.

- Delivery hoses, including those fitted to a hose reel, must be a single continuous length and have a shut-off valve at each end.
- Connect the transfer hose and confirm the couplings are not leaking during unloading.
- Gradually open the valves and when filling by volume, monitor the level of the receiving bulk storage to acknowledge when to slowdown and cease filling.
- Close the tanker/truck and bulk storage isolation valves when completed

Liquefied Chlorine Gas

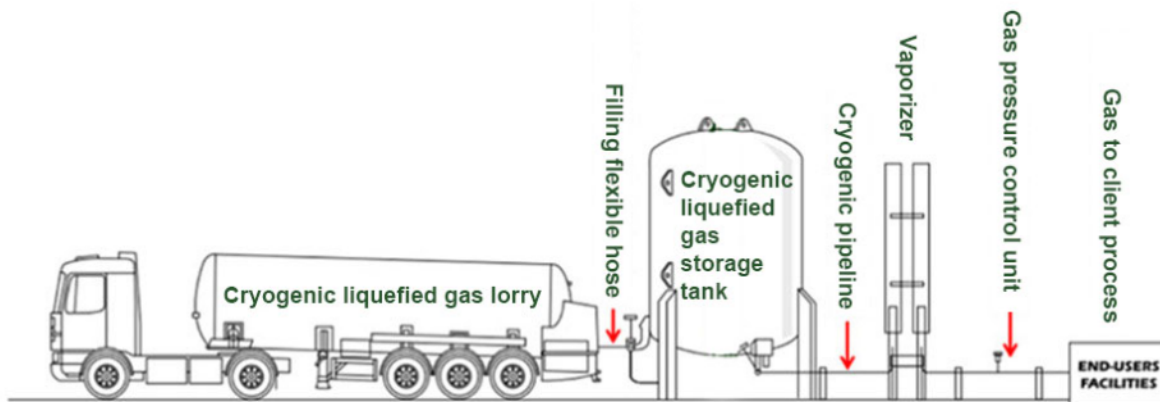
8.5. For the delivery of **Liquefied Chlorine Gas** the following instructions must be adhered to:

- Trained/Competent personnel must be present at all times
- Prior to delivery - Open building door/s & ensure that the ventilation fan if fitted is operating. Use door latches to secure door/s open.
- Ensure that all emergency showers and eye wash facilities are operational before any work begins.
- Ensure that all staff involved in the loading/unloading operation are using appropriate PPE. Breathing apparatus must be conveniently positioned, tested and ready to use if required.
- Position bulk delivery transport truck as close as possible to the doorway of the chlorine drum room in preparation for unloading of the full drums and loading of empty drums.

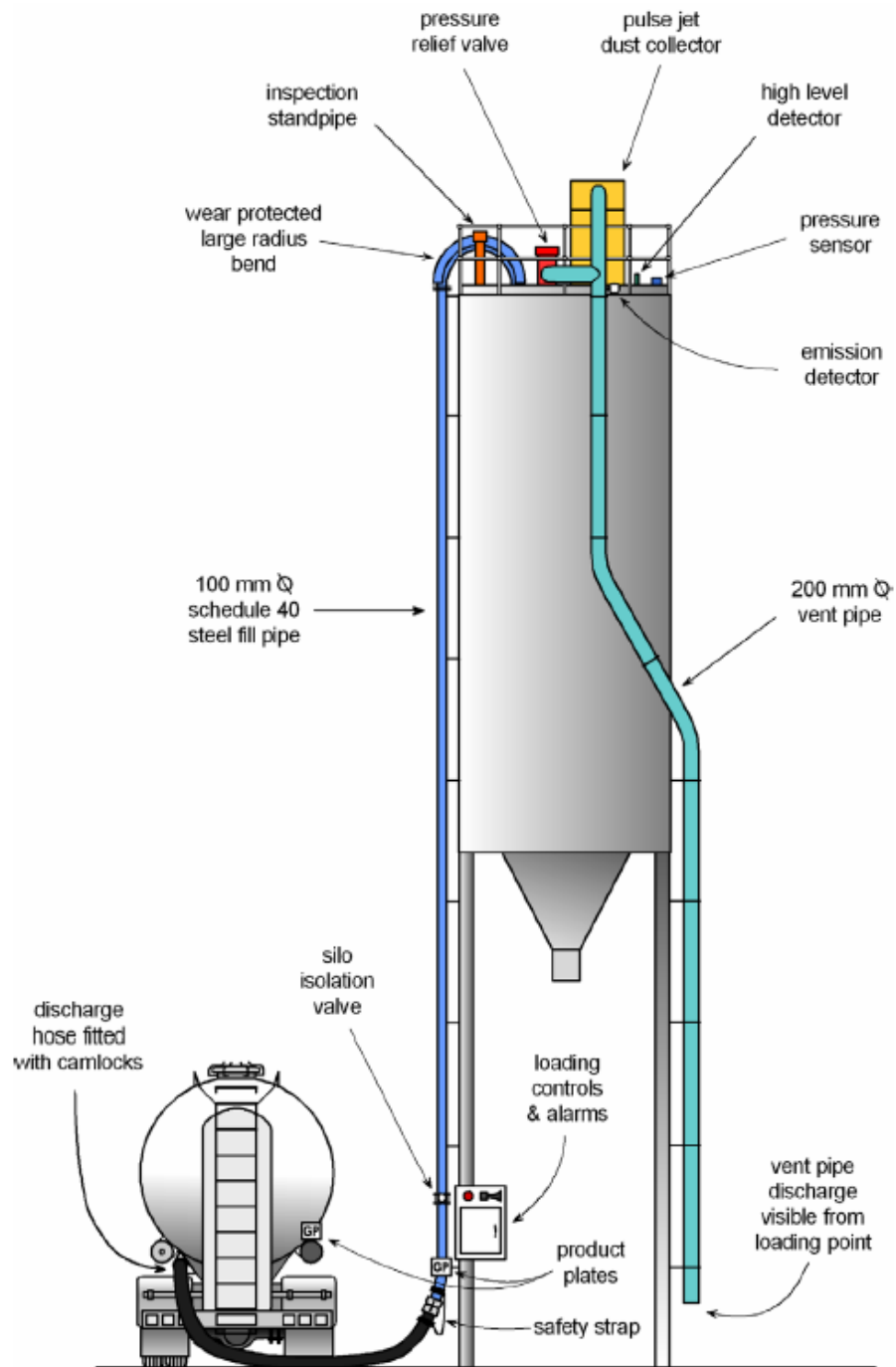
Note: Any empty drums for pickup are to be moved by the EOT into the pickup location prior to the delivery trucks arrival

- Truck driver unloads the full drum/s from the truck using the monorail or truck crane to a position in readiness for EOT gantry crane hook-up and positioning into the chlorine room.
- Any empty drum/s are then loaded onto the delivery truck by the truck driver to be taken away.

Note: Only after the delivery truck driver has left the site that drum placement and connection can commence.



Typical diagram of Bulk Gas Chemical storage and delivery



Typical diagram of Bulk Dry Chemical storage and delivery