Accident Management Plan

Accidents and Their Consequences

The major risks to the environment from hazardous materials used by the ZF TRW surface treatment facility are:

- Hazardous liquid spillage and entry into groundwater or surface water during delivery, storage or handling/movement of chemicals around the site;
- Escape of hazardous waste materials to groundwater or surface water during storage or collection for offsite disposal;
- Release of hazardous materials to sewer above trade effluent consent limits from failure of the effluent treatment plant;
- Exothermic reactions caused by mixing of incompatible chemicals;
- Vandalism; and
- Fire.

The first two risks are minimised by locating all chemicals storage areas and hazardous wastes storage areas inside the dedicated bunded areas. Deliveries of chemicals and collections of wastes are carried out by driving the collection or delivery vehicle inside the site or immediately adjacent to the effluent treatment plant or dedicated storage area.

The Anodise process, including pumps and load/unload stations, will be situated within a bunded area and the existing effluent treatment plant is installed within an area which is also bunded. The chemical store is bunded and all stations are labelled. Segregation is clear. It is designed to allow access by forklift trucks. Both the effluent treatment plant area and the chemical store will be covered by CCTV and alarms will be routed through to the security gatehouse, which is manned 24/7.

There are no immediate residential neighbours to ZF TRW and ZF TRW has not had any environmental accidents or incidents in the last ten years.

The table below summarises the additional measures that ZF TRW has implemented to prevent accidents and to limit any consequences.

Hazard	Probability of Occurrence	Pathway, Receptor and Consequence	Measures to Reduce the Risk
Accidental spillage of acids, alkalis or process chemicals during loading and unloading.	Low	Run-off into site bunded areas or to main yard area. Any spillages in yard can potentially be released to surface water drain and consequently to controlled waters. A release to controlled water could cause contamination to the water course and aquatic life.	All unloading operations are supervised at all times. All hazardous substances on site are delivered in sealed containers and have a very low potential for leakage even in the event of an incident. All materials are either transferred directly to or unloaded within bunded areas to further prevent spillage potential. Drain mats are provided throughout the site to prevent entry of run-off water entering the surface water drainage system when necessary.
Failure of pipe work used to pump acids, alkalis or process chemicals (including ETP chemicals) from the IBC's to the process tanks.	Moderate	Run-off into process bunded area or into internal drainage channels, which would then be pumped to effluent treatment plant for treatment.	All pipe work, tanks, supports, motors, pumps and filters are visually inspected each month as part of the maintenance management system. There is no external pipe work for the transfer of concentrated chemicals on site. Drain mats are provided throughout the site to prevent entry of run-off water entering the surface water drainage system when necessary.
Accidental spillage of small quantities of sulphuric, nitric and hydrochloric acids and sodium hydroxide solution from damage to small volume containers during delivery or movement around site.	Moderate	Run-off onto hard standing or into surface water system. These spillages could potentially be released (albeit following significant dilution) into controlled waters which could cause a minor impact to aquatic life.	All plastic containers of acid and alkali are stored in an internal roofed bunded hazardous chemical store area. All transport of chemicals is carried out by qualified fork lift truck operated or carried by hand. As part of the site EMS there is an established emergency spillage procedure which dictates how accidents of this nature should be handled. The site has a number of chemical spillage response kits which are located within the vicinity of the chemical storage and transfer areas. In the event of a spillage reaching the surface drain the surface water interceptor would provide temporary containment prior to release off site. Drain mats are provided throughout the site to prevent entry of run-off water entering the surface water drainage system when necessary. Chemicals are generally supplied in 25 or 45 litre containers.
Accidental spillage of small quantities of general chemicals from damage to containers during delivery or movement around site.	Moderate		

Hazard	Probability of Occurrence	Pathway, Receptor and Consequence	Measures to Reduce the Risk
Escape of hazardous waste materials from damage to containers during storage and collection from site.	Moderate	All run off would be to dedicated bunded areas which would then be pumped to effluent treatment plant for treatment or transferred off site for disposal.	Special wastes contained in IBC's or 205 litre drums are stored on pallets within a dedicated bunded area, which is located within the waste management compound. Drain mats are provided throughout the site to prevent entry of run-off water entering the surface water drainage system when necessary.
Release of nickel to sewer above trade effluent consent limits from failure of the effluent process	Low	Metal ions could impact the sewage treatment works via the foul sewer.	Nickel, Chromium or Metal ions could impact the sewage treatment works via the foul sewer The pH electrode which controls the process is maintained regularly to ensure that they operate correctly. Meters for the process are situated in the main effluent control room and are monitored regularly to check that the system is operating correctly. There is an alarm setting on the meter which will alert any faults in the system. In the event of a high or low pH there is the provision to manually dose using either acids or alkalis within the ETP.
Release of chromium to sewer above trade effluent consent limits from failure of the effluent process	Low		
Release of metal ions to sewer from failure of precipitation and flocculation process	Low		
Failure of holding tanks in effluent treatment plant	Low	Run-off into dedicated bunded area which would then be pumped to a tanker for off-site disposal.	Effluent treatment plant is located within chemically sealed bunded area. Any spillage is washed to a sump tank which is automatically transferred back into the process for re-treatment.
Fire associated with flammable materials within the facility creating noxious fumes and smoke and giving rise to contaminated fire-fighting water	Low	Run-off into bunded areas which would then be pumped to a tanker for off-site disposal. There is a potential for contaminated fire waters reaching the surface water system and subsequently being release to controlled waters	All chemical storage areas and hazardous waste storage areas have individual bunded areas. Site emergency plans include fire prevention practices which include sealing critical drains. Drain mats are provided throughout the site to prevent entry of run-off water entering the surface water drainage system when necessary.

Hazard	Probability of Occurrence	Pathway, Receptor and Consequence	Measures to Reduce the Risk
Generation of contaminated run-off during flooding of car park at front of site through either overflow of adjacent river, burst mains or rainfall.	Low	Run-off into surface water drainage system. Possible impact on the Afon Lywd	No chemicals or wastes are stored in car park areas to the front of the factory. All chemicals storage areas and wastes storage areas are located inside dedicated bunded areas. Drain mats are provided throughout the site to prevent entry of run-off water entering the surface water drainage system when necessary.
Vandalism resulting in uncontrolled release of oils, chemicals or wastes.	Low	Run-off into site bunded areas which would then be pumped to effluent treatment plant for treatment.	All chemical storage and waste storage areas are located inside dedicated bunded areas. The site is surrounded by a high level security fence. There are no public rights of way (footpaths etc) adjacent to the perimeter of the site bunded area. The gates providing vehicle access to the site are monitored at all times by security staff. The site is manned 24hours a day, 7 days per week and is equipped with numerous security cameras and CCTV systems.
Noise & Vibration from the operation of the process	Low	A potential noise source from the air extraction unit and stack fans associated with the process could be transmitted from the site to the surrounding area affecting the local residents.	The design, operation and maintenance of this potential source is expected to effectively mitigate any potential noise impact or vibration impacts Residential properties are a significant distance from the site and there have not been any noise complaints regarding ZF TRW in previous years. Therefore, ZF TRW concludes that there is currently no potential for reasonable cause for annoyance from noise emissions. However, ZF TRW will review the potential for reasonable annoyance from noise and take the appropriate actions to mitigate the effect of noise pollution from the process should any be identified.
Odour from the operation of the process	Low	A potential odour source from the air extraction unit and stack fans associated with the process could be transported from the site to the surrounding area affecting the local residents.	Based on tank chemical concentrations and process controls the emissions from this process are expected to be low and well within current benchmark Environmental quality standards. Therefore, it is not expected that the process will produce a visible plume or odour.