Appendix A14.6 Mitigation Measures and Abatement Options

Odour Control Technologies and their Applicability

Odour Control System	Description	Advantages	Disadvantages
Biofilter (BF)	Natural (Organic) media supports bacteria which oxidises H_2S. (e.g. wood chippings, heather, shell)	• Eco-friendly (no contaminated waste products) • Treats wide range of compounds • Lowest whole life cost • Low routine maintenance costs • Long track record • Can be part of a multi-stage system	• High loadings reduce media life and ability to remove organic sulphides • Media has limited upper bound performance under high loading • Replacement of media is labour intensive
Bio-Scrubber (inert media)	Inert media primed with bacteria and nutrients which oxidises H2S. e.g. shells, pumice stone, calcified seaweed etc.	• High H2S efficiency • Smaller footprint than Biofilter • Long media life - inert media (e.g.Pumice) has 10-20 year life, cf. chippings 3-5 years	• Acclimatisation period required • Requires even, consistent loading pattern • Poor against organic sulphides, e.g. mercaptans, dimethyl sulphide
Wet chemical scrubber (WCS)	Packed tower, sump, recirc. pumps, acid and alkali dosing, pH and ORP measures H2S demand. Demisting stage required. 2-stage preferable Consumables: NaOH, NaCL, H2S04 in proportion to H2S concentration	• Well proven, reliable, automatically adapts to rapidly changing odour loads • Suited to high flow high strength loads i.e. high performance • Can remove ammonia with acid stage	• Not eco-friendly (disposal of hazardous spent chemicals) • H&S requirements, tanker bays etc. • High maintenance and operation cost (cost of chemicals, continuous monitoring and sensor calibration required)
Dry chemical scrubber (DCS)	Physical and chemical adsorption. Impregnated Activated Carbon (AC) or Alumina, typically with KOH, $NaMn0_4$,	• Simple • Minimal maintenance • Treats a wide range of compounds • Does not require a start-up period • Good for remote locations	• High loads exhaust media quickly • Moisture sensitive, therefore dehumidification required (but caustic impregnation not so susceptible)
Catalytic Scrubber(CF,CIF)	Catalytic iron under 1 litre/min water spray creates rusty iron which oxidises H2S. Often used as 1st stage roughing to reduce load on polishing DCS filter	• Inexpensive • Can be stopped and started as required • Short startup time (1-2 days) • No chemicals, low power (fan only) • Water spray direct from potable supply	• Only 50% H2S removal therefore a roughing stage only