

#	Hazards	Causes	Recommended actions
1	Electrolyser failure and leakage of KOH	<ul style="list-style-type: none"> • Failure of equipment • Misoperation of equipment • Corrosion 	<ul style="list-style-type: none"> • Use of personal protective equipment • Installation of emergency shower and eye wash near electrolyzer • Install dike around electrolyzer and monitor pH of rainwater before drainage to sea • Regular inspection
2	Leakage of hydrogen (unignited) with possibility of ignition, detonation, or suffocation. - Hydrogen is colorless, odorless, and lighter than air. Leaks can go undetected and hydrogen can accumulate in confined spaces.	<ul style="list-style-type: none"> • Misoperation or failure of equipment • Poor maintenance • Corrosion 	<ul style="list-style-type: none"> • Install pressure safety valves • Monitor pressure in system • Install stationary gas detection with automatic shutdown or blowdown (2 of 3 detectors) • Include personal gas detector as PPE • Provide adequate safety zone barrier and sufficient ventilation • Regular inspection • Implement proper ventilation
3	Leakage of oxygen with possibility of increased fire hazards from other materials	<ul style="list-style-type: none"> • Misoperation or failure of equipment • Poor maintenance • Corrosion 	<ul style="list-style-type: none"> • Install pressure safety valves • Monitor pressure in system • Install stationary gas detection with automatic shutdown and blowdown (2 of 3) • Include personal gas detector as PPE • Regular inspection
4	Leakage of hydrogen (ignited) – fire or detonation	<ul style="list-style-type: none"> • Electrical failure • Static electricity from improper personal protective equipment • Hot surface • Mechanical friction • Live fire 	<ul style="list-style-type: none"> • Provide sufficient training and procedures for handling hydrogen fire • Use of PPE with fire protection and antistatic clothing • EX-Proof electrical equipment • Use of non-electrical/combustible tools when possible • Install stationary fighting equipment • Install blast wall and fire protection around EDS valves
5	Leakage of oxygen (ignited)	<ul style="list-style-type: none"> • Electrical failure • Static electricity from improper personal protective equipment 	<ul style="list-style-type: none"> • Provide sufficient training and procedures for handling fire in enriched O2 atmosphere • Use of PPE with fire protection and antistatic clothing • EX-Proof electrical equipment • Use of non-electrical/combustible tools when possible • Install stationary fighting equipment

		<ul style="list-style-type: none"> • Hot surface • Mechanical friction • Live fire 	
6	High pressure leakage – Hydrogen and oxygen is designed to be stored at 6.7 bar, which can lead to equipment failure due to increased pressure.	<ul style="list-style-type: none"> • Improper operation • Poor maintenance 	<ul style="list-style-type: none"> • Regular inspection and maintenance • Pressure relief valve • Proper operator training
7	Electrical Hazards - Electrolysis equipment operates on high electrical power, which can cause electric shocks or fires if not properly managed.	<ul style="list-style-type: none"> • Improper operation • Poor maintenance 	<ul style="list-style-type: none"> • Ensure proper grounding of all electrical equipment. • Regular inspection and maintenance of electrical systems. • Staff should be trained on the safe handling of electrical systems.