



WAREHOUSE AIR QUALITY- Chemical Spill

Storage spaces with shifting and assorted cargo implies many different substances that pass through the storage. Forklifts, myriad cargo, cardboard boxes, floor staff and members of the public offer many instances for accidents to occur. Once such incident occurred on October 31st, resulting in a punctured chemical barrel, causing spillage of such chemical in the warehouse. The spill was quickly covered with chemical sorbent (Stardust), however, strong chemical odour persisted. It was reported that several members of staff suffered general malaise (headache, light-headedness, nausea) as a consequence. On investigation, the label on the barrel only indicated the product brand, and possibility of exposure to ethylene glycol and styrene, with no chemical composition listing anywhere on the barrel. Chemical odours persisted for several days, till November 3rd 2025 when expertise was bought to scan for possible contaminants in the ambient air.

Chemical scan of the air inside the work area was conducted using a high-tech portable FTIR, capable of identifying and quantifying unknown chemical air contaminants based on their spectral signature. Screening results indicated levels of vinyl chloride, benzene and ethyl benzene (likely originating from the chemical spill), and carbon monoxide, nitrous oxide, nitrogen monoxide and nitrogen dioxide (likely from hot, poorly ventilated indoor air spaces vehicle exhaust gases).



Ch	Component	Concentrati...	Unit	Compensati...	Rel...	Res...
1	Water vapor H2O	1.12	vol-%	wet		
2	Carbon dioxide CO2	697.06	ppm	wet		
3	Methane CH4	2.079	ppm	wet		
4	Nitrous oxide N2O	0.3105	ppm	wet		
5	Ammonia NH3	0.000	ppm	wet		
6	Carbon monoxide CO	2.327	ppm	wet		
7	Ethyl benzene C8H10	0.45	ppm	wet		
8	m-Xylene C8H10	0.00	ppm	wet		
9	o-Xylene C8H10	0.00	ppm	wet		
10	p-Xylene C8H10	0.00	ppm	wet		
11	Benzene C6H6	0.54	ppm	wet		
12	Toluene C7H8	0.04	ppm	wet		
13	Nitrogen dioxide NO2	0.23	ppm	wet		
14	Nitrogen monoxide NO	4.74	ppm	wet		
15	Sulfur dioxide SO2	0.00	ppm	wet		
16	Formaldehyde CH2O	0.00	ppm	wet		
17	Propane C3H8	0.37	ppm	wet		
18	Hexane C6H14	0.01	ppm	wet		
19	Ethylene glycol monobutyl...	0.00	ppm	wet		
20	Styrene C8H8	0.08	ppm	wet		
21	Vinyl acetate C4H6O2	0.12	ppm	wet		
22	Vinyl chloride C2H3Cl	2.37	ppm	wet		
221	Ambient pressure	1011.00	mbar	N/A		
226	Cell temperature	30.00	C	N/A		
227	Interferometer temperature	17.70	C	N/A		
228	Detector temperature	37.02	C	N/A		
229	IG peak height	3.78	V	N/A		
230	IG Center	2335.00		N/A		

RECOMMENDATIONS

- Use clay/ chemical sorbent to remove spillage.
- Implement mitigation measures to improve the air quality inside the office and work-floor spaces to disperse volatile organic and inorganic contaminants before staff let back into the workspace.
- Vinyl chloride (exceeds ACGIH-TWA of 1ppm), benzene and ethylbenzene are cancer-causing.
- Ensure staff are checked for discontinuation of chemical exposure symptoms.