

Condition	Smoke/Fire	Silane Leak (5ppm)	Manual Action (EPO Button)	Exhaust Fan Failure	SiH4 Panel Fault (pressure/ flow)	HF gas detection (5ppm)
Detection System	ESL fire panel	Zellweger System 16	EPO	Photohelic gages	Switches	Lifeline sensor
System location	Middle door		Lab main entrance	Middle door	Left end-side wall (silane cabinet)	
Sensing zones	3 zones: 1: near silane cabinet 2: above scrubber 3: above Ulvac	4 zones: 1: Silane cabinet 2: Scrubber 3: Ulvac gas handling 4: Clean-room	N/A	3 zones: 1: Silane cabinet exhaust 2: Scrubber exh. 3: Ulvac vent exh.	Silane regulator hi-pressure side	Above CVD programmable reactor
Automated system response	ALARM Level 2 Audible and visual alarms (clean-room, preclean-room, hallway), UMPD notified ⁽²⁾, building alarm activation, gas interlock shutdown ⁽¹⁾			Alarm level 1 Gas interlock shutdown ⁽¹⁾⁽⁶⁾		
	<ul style="list-style-type: none"> • ESL Panel 3 Zone LEDs • ESL audible alarm 	<ul style="list-style-type: none"> • Syst 16 Panel 3 Point LEDs • Printout menu (concentration, zone) 	EPO audible and visual alarm above main door (in lab)			
Manual action	Immediate lab evacuation, pull manual station for building evacuation if not activated Call 911 ⁽³⁾ to confirm alarm (JM Patterson, bldg 083, room 2225, notify potential silane leak) Call lab manager (301 602 9858)			Contact lab manager (301 602 9858) Abort process		
Alarm shutdown	ESL Reset button	System 16 Reset button	Pull EPO button	Reset gas interlock panel after deactivating all sensor relays (return o normal conditions)		
	Main switch located in MDA alarm interface box (remove top grid to access switch)					

- (1) Gas interlock shutdown: closes all gas lines to Ulvac tool as well as silane bottle and tungsten hexafluoride bottle
- (2) UMPD will notify the Fire Department. If accidental alarm, call #53333 to cancel.
- (3) Though UMPD should automatically be contacted via the 24h monitoring unit, 911 should be called to confirm they received the alert.
- (4) If power shutdown, MDA alarm interface and System 16 gas detector have a few minutes UPS back-up. The ESL fire station is powered by a built-in 24 V battery.