

	<b>SAFE WORK PROCEDURE:</b>	Doc No		SWP-COE-15		
		Last Rev/Date		00	13 Apr 2010	
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1. **Application to:**

All personnel working on the Chlorine (Cl<sub>2</sub>) & BorontriChloride (BCl<sub>3</sub>) Gas Cabinet.

2. **Pre-requisite for Operation of the Gas Cabinet operation process:**

- 2.1. Must have attended the operation and safety training.
- 2.2. Must be fully understand the activity based risk assessment
- 2.3. Must be physically fit.
- 2.4. Must be fully qualified to operate the process by him/her self.

3. **Hazards that may be present:**

- 3.1. Gas Leak
- 3.2. High pressure gas burst

4. **Personal Protection Required:**

- 4.1. Gloves (Normal operation)
- 4.2. Face Mask / Respirators (Cylinder changing)

5. **Procedures:**

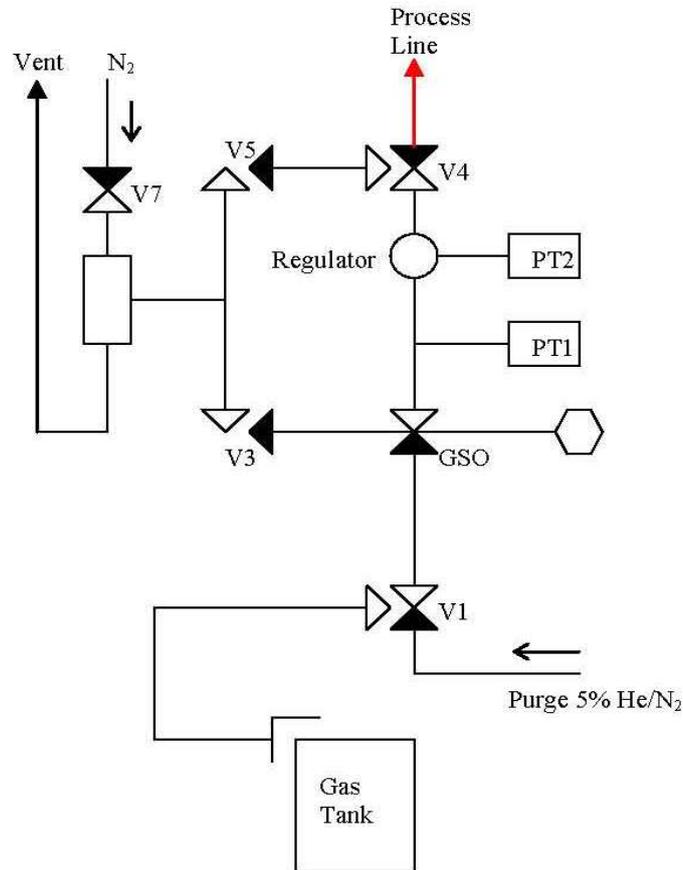
**5.1) Operating the Gas Cabinet operation process**

Put on the PPE as per section 4 before start work with Gas Cabinet operation process.

**5.2) Activating Gas Cabinet**

1. Using Gas Cabinet Safety lock Key and turning clockwise to activate the required Gas from the Cabinet.
2. Check the Gas pressure at LED display of Cabinet as per your process setting.
3. The process flow rate control and on/off function will be controlled by the Etching machine software.

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### 5.3) Purging the Gas Lines (Excluding process Line in Red)

1. Turn on the GSO by use of key and depressing the green button on the panel above.
2. Ensure 5% He/N<sub>2</sub> purge gas is turned on in the adjacent right chamber.
3. Ensure N<sub>2</sub> tank on left of gas cylinder chamber is supplying N<sub>2</sub> into V7.
4. Close V4 to isolate process line.
5. Open V7 for venting to the atmosphere.
6. Open V1 to introduce purge gas into gas lines.
7. Close V1 and open V5 to vent the purge gas in gas lines to the atmosphere.
8. Close V5
9. Repeat steps 6-8 for 60 cycles.
10. After purging, ensure V1, V5 and V7 are closed.

### 5.4) Purging the Gas Lines (Including process Line in Red)

1. Repeat step 1-3 in the above purge process.
2. Open V4 to include the purging of process line.
3. Repeat steps 5-9 in the above purge process.
4. After purging, ensure V1, V4, V5 and V7 are closed.

### 5.5) Changing of Gas cylinder

1. Repeat step 1-8 in the first purge process.
2. However for step 9 in the first purge process, instead of 60 cycles, 15 will suffice.
3. After purging, ensure V1, V5 and V7 are closed.

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#### 5.6 Maintenance of the Gas cabinet

- 5.6.1 Regular Preventive Maintenance (PM) required at least once per year.
- 5.6.2 Gas cylinder base should be check for corrosion or rusting.
- 5.6.3 Gas pipe line should be check for leak/blockage.
- 5.6.4 Gas cabinet exhaust line should be check for clear of blockage.

#### 5.7 Specific Processes

- 5.7.1 There is NO specific process

### 6. Communication Frequency:

The Lab Supervisor shall arrange for this Safe Work Procedure to be communicated every once a year and as & when required.

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Approved by: A/Prof Chor Eng Fong