

Safe Working Practices for SNL/NM Center 1100

Part A: PHS Information

PHS Identification

PHS - SNL08A00071-006 – Integration Lab Parts Clean Room ; PHS-SNL06A00448-008 CINT (clean room, all labs) - Integration Lab

Hazard Classification: Low

NEPA - SNA08-0179- CINT Rm. 1511 – Integration Lab Parts Clean Room

Laboratory Owner

John Nogan, 1132, 284-8863

Brief Description of R&D Work Performed in this Laboratory

The parts clean room houses tools that support integration lab activities. Systems include a HEPA filtered bead blasting system attached to house exhaust used for cleaning of shielding of the e-beam evaporator system. Other equipment includes an acid and solvent fume hood used for degreasing and etching of parts used in the clean room. There are also wafer dicing saws used for dicing wafers from the integration lab. A probe station is used for performing analysis on micro-devices fabricated in the Integration Lab.

Part B: Operations Identification, Hazards and Mitigation

<p>Short Title of Laboratory Operations Category: Chemical Usage Rigor Level: Medium</p> <p>Description of Laboratory-Specific Operations that Involves Chemical Hazards: <i>Bases:</i> Tetramethylammonium hydroxide and potassium hydroxide. <i>Oxidizers:</i> Hydrogen Peroxide</p> <p>Local exhaust ventilation (LEV) is used for exhausting fume hood effluents, in accordance with LEV guidelines and monitored through the LEV inventory control program. Air discharges are small and consistent with typical R&D operations.</p> <p>Handling of Acid/Base process chemistries that exhibit a particularly above average risk are clearly outlined in "Chemical Processing Guides". These Chemical Processing Guides can be found in the Acid/Base Wet Bench Tool Specific Notebook.</p> <p>All activities that involve chemicals will follow the laboratory practices outlined in SNL/NM Center SOP1100.00 Standard Operating Procedure for Working with Hazardous and Particularly Hazardous Chemicals in Center 1100 Laboratories.</p>	
<p>Applicable Technical Work Documents:</p> <ul style="list-style-type: none"> • SOP1100.001 Standard Operating Procedure for Working with Hazardous and Particularly Hazardous Chemicals in SNL/NM Center 1100 Laboratories <p>These documents are required reading for all authorized workers.</p>	<p>Required Training:</p> <ul style="list-style-type: none"> • ESH100 ES&H Awareness • CHM100 Laboratory Standard Information and Training • CHM103 Site-Specific Laboratory Safety Training • ENV112 Hazardous Waste and Environmental Management <p>These courses are required training for all authorized workers.</p>
<p>Possible Chemical Hazards:</p> <ul style="list-style-type: none"> • Adverse reaction from contact with incompatible materials. • Fire due to exposure to an ignition source. • Bodily Injury due to absorption, injection, ingestion or inhalation of a toxic substance. • Refer to the Material Safety Datasheets for more detailed information on material specific hazards. 	<p>Mitigation of Chemical Hazards:</p> <p>Solvents are stored in an approved flammable cabinet. Other hazardous liquids are stored in the appropriate manner per SOP1100.001. A minimum of latex gloves and safety glasses are worn while handling hazardous liquids to mitigate incidental contact and are handled in dedicated local exhaust systems.</p> <p>To mitigate incidental contact, all chemicals are handled with basic PPE (latex gloves and safety glasses) and always in a dedicated local exhaust system. Additional PPE (specific chemical resistant gloves, lab coat and safety goggles) is utilized based on the chemical hazard as per the chemical MSDS and SOP1100.001. All hazardous waste is disposed of in accordance with SOP1100.001.</p>

Short Title of Laboratory Operations Category: Environmental Rigor Level: Low	
Description of Laboratory Operations Category: Solid as well as liquid hazardous waste is generated during operation processes.	
Applicable Technical Work Documents: <ul style="list-style-type: none"> • SOP1100.001 Standard Operating Procedure for Working with Hazardous and Particularly Hazardous Chemicals in SNL/NM Center 1100 Laboratories 	Required Training: <ul style="list-style-type: none"> • CHM100 Laboratory Standard Information and Training • CHM103 Site-Specific Laboratory Safety Training • ENV112 Hazardous Waste and Environmental Management.
These documents are required reading for all authorized workers.	These courses are required training for all authorized workers.
Resulting Hazards: <ul style="list-style-type: none"> • Environmental concerns if organic solvent should enter the wastewater treatment system. • Solid solvent waste placed in landfill could leach and enter the environment. • Dumpster fire, toxic fumes entering the environment. 	Mitigation of Identified Hazards: Hazardous waste is collected and disposed of in accordance with requirements in Corporate Procedure ESH100.2.ENV.22 Manage Hazardous Waste at SNL/NM. Waste containers are marked properly.

Short Title of Laboratory Operations Category: Mechanical hazards Rigor Level: Low	
Description of Laboratory Operations Category: Portable power tools are used in operations.	
Applicable Technical Work Documents: <ul style="list-style-type: none"> • N/A 	Required Training: <ul style="list-style-type: none"> • ESH100 ES&H Awareness
These documents are required reading for all authorized workers.	These documents are required reading for all authorized workers.
Resulting Hazards: <ul style="list-style-type: none"> • Bodily injury which could include, sprains, cuts and scrapes. • Eye Injury possible if ANSI approved safety glasses are not worn during this activity. 	Mitigation of Identified Hazards: If necessary, personnel are provided OJT training on a tool.

Continuous Improvement and Feedback

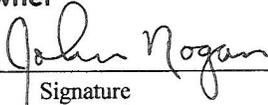
This SWP document must be reviewed, revised (if necessary), and re-signed at least annually in conjunction with PHS renewal. This SWP must be revised earlier in response to:

- new hazards (e.g. chemicals) being introduced in to the laboratory,
- recognition of hazards not previously considered, or
- identification of significant improvements to hazard control/mitigation defined in this document,

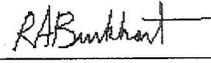
and other situations where improvement to laboratory safety should be documented. It should be noted that these same conditions may require revision of the laboratory PHS and required training matrix.

Reviews and Approval

Prepared by Laboratory Owner

<u>John Nogan</u>		<u>8/29/12</u>
Printed Name	Signature	Date

Reviewed by CINT ES&H Coordinator

<u>Bob Burkhart</u>		<u>8/29/12</u>
Printed Name	Signature	Date

rab Center ES&H Coordinator initials here designate that further review by Industrial Hygiene or other Subject Matter Experts is not required.

Reviewed by Center Industrial Hygienist as required

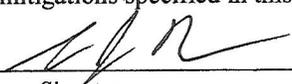
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Printed Name	Signature	Date

Additional SME Review required by Center ES&H Coordinator or Department Manager

_____	_____	_____	_____
Reviewer	Title/Activity	Signature	Date

Approved by Department Manager

By approving the SWP, the Department Manager attests that it is an appropriate assessment of the ES&H risks associated with the R&D activities that are authorized to take place in the designated lab(s). The approval signature further indicates that the hazard mitigations specified in this SWP are also appropriate.

<u>Sean Hearne</u>		<u>8/29/12</u>
Printed Name	Signature	Date

Authorized Worker Agreement:

Signature by the Authorized Workers in the following Summary Authorization Table certify that the worker has read, understood, and agree to follow the Safe Working Practices identified in this document. Authorized Workers agree that they will not introduce hazards into this laboratory that are not covered by the PHS, SWP, and related documents.”

If a new employee (e.g. student, post doc, etc) is brought in to work in the laboratory, their training must be evaluated by the manager prior to any work being assigned or conducted. Their signature asserts that this has been done.

Printed Name	Signature	Date	Lab Owner Confirm. (Initials)	Chemical Operations	Environmental	Mechanical Hazards												
				M	L	L												
<i>Rigor Level</i>																		