

## NC Job Risk Assessment

<b>Name(s) of Risk Team Members:</b> L. Davis, D. Elling, S. Hoey, W. Litzke, A. Pier	<b>Point Value → Parameter ↓</b>	1	2	3	4	5
	<b>Frequency (B)</b>	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
<b>Job Title: Cryogenic Work</b>  <b>Job Number or Job Identifier: NC-JRA-005</b>	<b>Severity (C)</b>	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
<b>Job Description:</b> General work with non-combustible cryogenic fluids and systems. Does <b>not</b> include liquid hydrogen or liquid oxygen. Training and Procedure List (Optional):  Approved By: S. Hoey 7/18/07 Rev. #: 0	<b>Likelihood (D)</b>	Extremely Unlikely	Unlikely	Possible	Probable	Multiple
<b>Stressors (if applicable, please list all):</b>		<b>Reason for Revision (if applicable):</b>			<b>Comments:</b>	

Job Step / Task	Hazard	Control(s)	Before Additional Controls						Control(s) Added to Reduce Risk	After Additional Controls						
			Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD		Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
Moving storage vessel (dewar) to/from location	Overexertion injuries caused by excessive lifting, pushing, pulling, holding or carrying an object	Wheeled dewars, training, safety shoes	N	1	4	2	2	16								
	Being struck by object due to pressure release	Vessel design/certification, equipment inspection, training, Tier 1	N	1	1	2	1	2								
	Dewar tip over due to uneven surfaces	Dedicated transfer route	N	1	2	2	3	12								

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Connecting or disconnecting storage dewar to cryostat	Falls to lower level from ladders or other cryostat access	Dedicated Ladder, equipment inspection, Tier 1, training, procedures	N	1	3	3	3	27							
	Being struck by object due to pressure release	Vessel design/certification, equipment inspection, training, Tier 1	N	1	1	2	1	2							
	Contact with temperature extremes that result in such injuries frost bite or burns	Training, procedures, PPE, gloves, eye protection, proper clothing	N	1	3	2	3	18							
	Oxygen deficiency	Training, posting, safety reviews, ventilation, ODH calculations	N	2	4	5	1	40							
Pressurizing storage dewar	See "Work with Compressed gas" JRA	See working with compressed gases													
Transferring cryogenic liquid from storage dewar to cryostat	Being struck by object due to pressure release	Vessel design/certification, equipment inspection, training, Tier 1	N	1	1	2	1	2							
	Contact with temperature extremes that result in such injuries frost bite or burns, frozen o-ring	Training, procedures, gloves, eye protection, proper clothing	N	1	1	2	1	2							
	Oxygen deficiency	Training, posting, safety reviews, ventilation, ODH calculations	N	2	4	5	1	40							
	Auto-fill failure	Design, training, ODH calculations, procedure	N	1	1	5	1	5							

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			Before Additional Controls						After Additional Controls							
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Transferring cryogenic fluid to portable dewar, or system	Contact with temperature extremes that result in such injuries frost bite or burns	Training, procedures, gloves, eye protection, proper clothing	N	1	3	2	3	18								
	Oxygen deficiency	Training, posting, safety reviews, ventilation, ODH calculations	N	1	3	4	1	12								
<b>Further Description of Controls Added to Reduce Risk:</b>																
<b>*Risk:</b>	<b>0 to 20 Negligible</b>	<b>21 to 40 Acceptable</b>	<b>41 to 60 Moderate</b>					<b>61 to 80 Substantial</b>					<b>81 or greater Intolerable</b>			