

Name(s) of Risk Team Members: P. Cirnigliaro, F. Kobasiuk			Point Value → Parameter ↓		1	2	3	4	5		
Area/Facility Description Title: Collider-Accelerator Department Area/Facility # (if applicable): Area-Wide FRA 10-07			Occupancy or Use		≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift		
Area/Facility Description: Area-Wide Shops			Severity		First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability		
			Likelihood		Extremely Unlikely	Unlikely	Possible	Probable	Multiple		
Approved by: <i>E. Lessard</i> Date: 4-24-07 Rev.#: 0							Comments:				
Reason for Revision (if applicable):											
			Before Additional Controls				After Additional Controls				
Physical Item or Activity	Hazard(s)	Control(s)	Occupancy A	Severity B	Likelihood C	Risk* AxBxC	Control(s) Added to Reduce Risk				% Risk Reduction
Machining activated materials	Radiation exposure	Radiation surveys, facility specific training, work planning, radiation work permits, ALARA Committee review, shielding as needed, HEPA filters, PPE	2	1	1	2					
Treating materials with chemicals/plating	Chemical burns	PPE, ventilation, specific hazard training, MSDS, solvent tank covers and controls	3	4	2	24					
Treating materials with chemicals/plating	Chemical exposure	PPE, ventilation, specific hazard training, MSDS, solvent tank covers and controls	4	4	3	48					
Machining materials (not activated non-hazardous)	Becoming caught in or compressed by equipment	Equipment specific training, machine guards, PPE, postings, maintenance, Tier 1 inspections	4	4	3	48					
Machining materials (not activated non-hazardous)	Being struck by an object, such as flying debris	Equipment specific training, machine guards, PPE, postings, maintenance, Tier 1 inspections	4	5	2	24					
Machining materials (not activated non-hazardous)	Airborne particulates	PPE, ventilation, maintenance, work planning	4	2	3	24					
Working with compressed air	Pressure	PPE, pressure reducing nozzles	4	3	2	24					
Working with compressed air	Being struck by an object, such as flying debris	Equipment specific training, guards, PPE, postings, maintenance, Tier 1 inspections	4	3	2	24					
Welding and brazing	UV exposure	PPE, work planning, procedures, welding permits, designated welding areas reviewed by Fire/Rescue (F/R) Group	2	3	3	24					
Welding and brazing	Electric shock	Maintenance of equipment, training, UL approved equipment	2	5	2	20					
Welding and brazing	Thermal and IR burns	PPE, work planning, procedures, training, designated welding areas reviewed by F/R Group	2	2	3	12					
Welding and brazing	Toxic fumes	PPE, work planning, ventilation, designated welding areas reviewed by F/R Group	2	3	3	18					
Welding and brazing	Noise	Ear protection, work planning, medicals	2	4	2	16					

Welding and brazing	Fire/Explosion	Removal of regulators and separation of fuel tanks	2	5	2	20					
Soldering	Burns	PPE, work planning, procedures, training	5	1	3	15					
Soldering	Toxic fumes	PPE, work planning, procedures, training, ventilation, medicals	5	1	1	5					
Manual material handling	Improper material securement, loss of control	Work planning, equipment specific training, work area barricades and controls, PPE, clamps, vices, fixtures, specific rigging training.	4	4	2	32					
Use of hand tools	Flying chips	PPE, training, maintenance, Tier 1 inspections, UL listed equipment, pre-inspections	5	4	2	40					
Use of hand tools	Electrical shock	GFCI, grounding cases or insulated cases	5	3	2	30					
Use of hand tools	Sharp surfaces	PPE, training, guards	5	3	3	40					
Use of hand tools	Rotating parts	Equipment specific training, guarding, PPE, postings	5	3	3	40					
Chemical Handling	Burns	Procedures, compliance with regulations, training, CMS inventory, MSDS, volume controls, Fire/Rescue group response, PPE as required, locked or controlled areas, postings, labeling, proper containers, segregation, spill cleanup equipment available, Tier 1 inspections	4	3	2	24					
Chemical Handling	Asphyxiation	Procedures, compliance with regulations, training, CMS inventory, MSDS, volume controls, Fire/Rescue group response, PPE as required, locked or controlled areas, postings, labeling, segregation, Tier 1 inspections	4	3	2	24					
Chemical Handling	Eye exposure	Procedures, compliance with regulations, training, CMS inventory, MSDS, volume controls, PPE as required, eyewash and showers, locked or controlled areas, postings, labeling, proper containers, segregation, Tier 1 inspections	4	4	2	32					
Shop magnets	High pH, chemical burns	Postings, barriers, PPE, maintenance, training, work planning, procedures, Tier 1 inspections, CMS, MSDS	3	2	2	12					
Shop magnets	Magnetic fields causing adverse mechanical force exerted on ferromagnetic objects and or to electronic/medical implants.	Posting, fencing, warnings, magnet design reviews, field measurements, medicals, work planning, ASSRC reviews, work planning	4	4	2	32					
Shop magnets	Thermal exposure	Postings, maintenance, PPE, training, work planning, ASSRC review, procedures, Tier 1 inspections	4	3	2	24					
Shop Magnets Pressure Checking	Being struck by an object such as flying debris	PPE, Engineering control, work planning	2	3	2	12					
Shop power supplies (test equipment)	Shock Hazard	Postings, labels, training, work planning, NRTL rating	1	2	2	4					
Shop power supplies (test equipment)	Thermal exposure	Postings, maintenance, training, work planning, ASSRC reviews, procedures, interlock systems, Tier 1 inspections, RF gaskets, PPE	1	3	2	6					
Operation of circuit breakers or disconnects for machine maintenance.	Electrical shock, arc flash	Postings, labels, training, LOTO, PPE.	1	5	3	15					

Further Description of Controls Added to Reduce Risk:

*Risk:	0 to 20	21 to 40	41-60	61 to 80	81 or greater
	Negligible	Acceptable	Moderate	Substantial	Intolerable