

Lab Hazard Analysis Tool

Office of Environmental Health & Safety

Principal Investigator: Lab Location: Date:

Hazard Category	Subcategory	Working Quantities (not	Response	Potential Hazard(s)		Controls	
		qtys in inventory)	Yes No		Engineering	Administrative	PPE
Chemical 01	Corrosives: liquids and/or solids	< 4 liters, < 1 lb		Eye/skin damage	Chemical fume hood	 General SOP for corrosives 	 Splash goggles or safety glasses
				Splash		Chemical-specific SOP	 Chemical-resistant gloves
							 100% cotton lab coat
Chemical 02	Corrosives: liquids and/or solids	> 4 liters, > 1 lb		Poisoning	Chemical fume hood	General SOP for corrosives	Splash goggles
				Greater potential for eye/skin damage		Chemical-specific SOP	 Chemical-resistant gloves
				Splash			100% cotton lab coat
							Chemical-resistant apron
Chemical 03	Flammable/combustible solvents;	< 4 liters		Eye/skin damage	Chemical fume hood	General SOP for flammables/combustibles	Safety glasses or splash goggles
	organic fixatives			Potential poisoning through skin contact		Chemical-specific SOP	Chemical-resistant gloves
	· ·			• Fire		•	Flame-resistant lab coat or Nomex
Chemical 04	Flammable/combustible solvents;	> 4 liters		Major eye/skin damage	Chemical fume hood	General SOP for flammables/combustibles	Safety glasses or splash goggles
	organic fixatives			Potential poisoning through skin contact		Chemical-specific SOP	Chemical-resistant gloves
	<u></u>			• Fire			• Nomex
Chemical 05	Toxic substances	Any amount		Exposure through inhalation, ingestion,	Chemical fume hood	General SOP for toxic materials	Safety glasses or splash goggles
chemical 05	Toxic substances	Any amount		injection, or absorption	chemical fame nood	Chemical-specific SOP	Chemical-resistant gloves
				injection, or absorption		chemical specific 501	• 100% cotton lab coat
Chemical 06	Toxic substances - Carcinogens	Any amount		Exposure through inhalation, ingestion,	Chemical fume hood	General SOP for carcinogens	Safety glasses or splash goggles
Cileilicai 00	Toxic substances - Carcinogens	Any amount			Chemical fame 11000	General SOF for carcinogens	- Salety glasses of spiasif goggles
				injection, or absorption		• Chamilan and fin COD	• Chaminal ansistant alarma
				Cancer-causing		Chemical-specific SOP	Chemical-resistant gloves
cl : 107	T : 1 : 5 1 ::				<u> </u>		• 100% cotton lab coat
Chemical 07	Toxic substances -Reproductive	Any amount		Exposure through inhalation, ingestion,	Chemical fume hood or inert	 General SOP for reproductive toxicants 	 Safety glasses or splash goggles
	toxicants			injection, or absorption	atmosphere chamber		
				Mutagenic		Chemical-specific SOP	Chemical-resistant gloves
				Teratogenic			100% cotton lab coat
Chemical 08	Highly toxic substances	Any amount		 Exposure through inhalation, ingestion, 	Chemical fume hood or inert	 General SOP for toxic materials 	 Safety glasses or splash goggles
				injection, or absorption	atmosphere chamber		
				Chemicals pose a high level of immediate		Chemical-specific SOP	 Chemical-resistant gloves
				health risk			
							100% cotton lab coat
Chemical 09	Pyrophoric or water-reactive	Any amount		 Severe skin/eye damage 	Inert atmosphere chamber	 General SOP for reactive materials 	 Safety glasses or splash goggles
	chemicals (Class 2 or Class 3)			• Fire		Chemical-specific SOP	 Chemical-resistant gloves
							Nomex
Chemical 10	Explosive/highly reactive materials	Any amount		Detonation	Chemical fume hood with blast shie	eld • General SOP for explosive, highly reactive	 Safety glasses or splash goggles
					or Inert atmosphere chamber	materials	
				Flying debris		Chemical-specific SOP	Face shield
				Severe skin/eye damage			Chemical-resistant gloves
				• Fire			Nomex
Di-1i1 04	M/andrian with houses and a	America		F	Discrete: Cabinat (DCC)	Weither COD for any advantage in the last the la	
Biological 01	Working with human or non-human	Any		Exposure to infectious materials	Biosafety Cabinet (BSC)	Written SOP for procedures involving listed	fluid resistant lab coat
	primate blood, body fluids, tissues,			sharps injuries	Safety engineered sharps	materials	eye protection
	cells, or other potentially infectious				plasticware instead of glassware	Appropriate training (documented)	gloves
	materials (OPIM), which may					Proper waste disposal	closed-toe shoes
	contain human Blood borne					Signage	
	pathogens						
Biological 02	Working with microbial agents	Any		Eye irritation	Biosafety Cabinet (BSC)	Written SOP for procedures involving listed	lab coat
	(bacteria, virus, parasites, yeast,			sharps injury	Safety engineered sharps	materials	eye protection
	fungi, prions), recombinant DNA			cross-contamination of animal or extra-		Appropriate training (documented)	gloves
	and/or biological materials exposed			laboratory areas		Proper disinfected waste disposal	closed-toe shoes
	to or likely to be contain risk group 1	L		Exposure of infectious materials to those who		Signage	
	(RG1) microbial agents or rDNA			may have personal health issues which make			
				them more susceptible to infection			

Page 1 of 3 revised 12/2015



Lab Hazard Analysis Tool

Office of Environmental Health & Safety

Principal Investigator: Lab Location: Date:

Hazard Category	Subcategory	Working Quantities (not	Response		Potential Hazard(s)		Controls	
		qtys in inventory)	Yes	No		Engineering	Administrative	PPE
Biological 03	Working with microbial agents,	Any			Exposure to infectious materials through broken		Written SOP for procedures involving listed	fluid resistant lab coat
Ü	recombinant DNA and/or biological				skin or mucosal membranes	Safety engineered sharps	materials	eye protection
	materials exposed to or likely to				Sharps injury	,	Appropriate training (documented)	gloves
	contain risk group 2 (RG2) microbial						Proper disinfected waste disposal	closed-toe shoes
	agents or rDNA						Signage	
Biological 04	Working with microbial agents,	Any			Exposure to infectious materials through broken	Riosafety Cabinet (RSC)	Written SOP for procedures involving listed	dedicated/disposable lab coat (fluid resistant)
Biological 04	recombinant DNA and/or biological	Zury			skin or mucosal membranes	Safety engineered sharps	materials	face/eye protection
	materials exposed to or likely to				Sharps injury	Safety engineered sharps	BSL2+ training (documented)	double gloving
l	· · · · · · · · · · · · · · · · · · ·				Silar ps injury		- ·	
	contain Risk Group 2 microbial						Proper disinfected waste disposal	closed-toe shoes; surgical mask or N95 (as
	agents or rDNA for which biosafety						signage	determined by IBC)
	level 3 practices are required (BSL2+							
	containment)							
Biological 05	Working with microbial agents,	Any			Exposure to infectious materials with high risk	BSL3 facility	Written SOP for procedures involving listed	Scrubs; Tyvek suit with shoe covers
l	rDNA and/or biological materials				of exposure, particularly through inhalation	Biosafety Cabinet (BSC)	materials; enrollment in occupational health	Powered air purifying respirators (PAPR)/ N95
İ	exposed to or likely to contain Risk				route	Safety engineered sharps	program	(determined by IBC)
ĺ	Group 3 agents or rDNA				Sharps injury		BSL3 training (documented)	Double gloves
							Proper disinfected waste disposal	dedicated shoes
<u> </u>							signage	
Biological 06	Working with live animals alone or	Any			Animal bites	Biosafety Cabinet/Changing Station	Written SOP for procedures involving listed	Disposable gown
i -	in conjunction with risk group 1				Allergies/ Eye irritation	Safety engineered sharps	materials	Shoe covers
İ	(RG1) agents or rDNA which falls				Sharps injury		Appropriate training (documented)	Surgical face mask
İ	under ABSL1 containment				Exposure to biological materials to personnel		Proper disinfected waste disposal	Gloves; hair bonnet
İ					that may be susceptible to infection		signage	
İ					,,		-66-	
Biological 07	Working with infected or potentially	Any			Animal bites	Biosafety Cabinet/Changing Station	Written SOP for procedures involving listed	Disposable gown
İ	infectious live animals				Allergies/ Eye irritation	Safety engineered sharps	materials	Shoe cover
	alone/conjunction with risk group 2				Sharps injury	, , , ,	Appropriate training (documented)	Surgical face mask
ĺ	(RG2) microbial agents or rDNA				Exposure to biological materials to personnel		Proper disinfected waste disposal	Gloves; hair bonnet
ĺ	which required ABSL2 containment				that may be susceptible to infection		signage	
İ					,,		-66-	
Biological 08	Working with biological toxins or	Any			Exposure to toxins or venoms	Biosafety Cabinet/Changing Station	Written SOP for procedures involving listed	fluid resistant lab coat
D. DIOBICAL DO	materials exposed to biological	•						
1					Snarp injury	Safety engineered sharps	materials	eve protection
l					Sharp injury	Safety engineered sharps	materials Appropriate training (documented)	eye protection
	toxins or toxic/venomous plants,				Snarp injury	Safety engineered sharps	Appropriate training (documented)	gloves
					Snarp injury	Safety engineered sharps	Appropriate training (documented) Proper disinfected waste disposal	
	toxins or toxic/venomous plants,				Snarp injury		Appropriate training (documented) Proper disinfected waste disposal signage	gloves closed-toe shoes
Radiation 01	toxins or toxic/venomous plants, animals or insects	Any Amount				Safety engineered sharps Appropriate Shielding	Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks	gloves closed-toe shoes Gloves for applicable chemical hazard
Radiation 01	toxins or toxic/venomous plants, animals or insects Working with radioactive material or	•			Damage to body cells		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses
	toxins or toxic/venomous plants, animals or insects	· ·					Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities	gloves closed-toe shoes Gloves for applicable chemical hazard
Radiation 01	toxins or toxic/venomous plants, animals or insects Working with radioactive material or	•			Damage to body cells		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses
	toxins or toxic/venomous plants, animals or insects Working with radioactive material or	· ·			Damage to body cells		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses
	toxins or toxic/venomous plants, animals or insects Working with radioactive material or	· ·			Damage to body cells Contamination of radioactive material		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses
	toxins or toxic/venomous plants, animals or insects Working with radioactive material or	· ·			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses
	toxins or toxic/venomous plants, animals or insects Working with radioactive material or	· ·			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat
	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid)	· ·			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat
	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid) Working with generally licensed	· ·			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then high potential for spread of contamination		Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat
Radiation 02	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid) Working with generally licensed	Any Amount			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then high potential for spread of contamination Cell damage due to exposure	Appropriate Shielding	Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS Waste: Disposed as radioactive waste	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat
Radiation 02	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid) Working with generally licensed	Any Amount			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then high potential for spread of contamination Cell damage due to exposure Cell, Liver, Kidney damage due to chronic exposure	Appropriate Shielding	Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS Waste: Disposed as radioactive waste Waste: Dispose it as radioactive waste through EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat Normal working conditions - NO PPE required Gloves for applicable chemical hazard
Radiation 02	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid) Working with generally licensed sealed radioactive sources Working with generally licensed	Any Amount			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then high potential for spread of contamination Cell damage due to exposure Cell, Liver, Kidney damage due to chronic exposure Spread of contamination,	Appropriate Shielding	Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS Waste: Disposed as radioactive waste Waste: Dispose it as radioactive waste through EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat Normal working conditions - NO PPE required Gloves for applicable chemical hazard Safety glasses
Radiation 02 Radiation 03	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid) Working with generally licensed sealed radioactive sources Working with generally licensed unsealed radioactive sources	Any Amount Any Amount			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then high potential for spread of contamination Cell damage due to exposure Cell, Liver, Kidney damage due to chronic exposure	Appropriate Shielding Appropriate Shielding	Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS Waste: Disposed as radioactive waste Waste: Dispose it as radioactive waste through EHS Contamination Checks	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat Normal working conditions - NO PPE required Gloves for applicable chemical hazard
Radiation 02	toxins or toxic/venomous plants, animals or insects Working with radioactive material or radioactive waste (Solid & Liquid) Working with generally licensed sealed radioactive sources Working with generally licensed	Any Amount			Damage to body cells Contamination of radioactive material If the integrity of sealed source is compromised either by physical abuse or removal of the source from equipment then high potential for spread of contamination Cell damage due to exposure Cell, Liver, Kidney damage due to chronic exposure Spread of contamination,	Appropriate Shielding	Appropriate training (documented) Proper disinfected waste disposal signage Contamination Checks Training and SOPs required Documentation - All activities Sources inside equipment may be removed by manufacturer or EHS Waste: Disposed as radioactive waste Waste: Dispose it as radioactive waste through EHS	gloves closed-toe shoes Gloves for applicable chemical hazard Safety glasses Lab coat Normal working conditions - NO PPE required Gloves for applicable chemical hazard Safety glasses

Page 2 of 3 revised 12/2015



Lab Hazard Analysis Tool

Office of Environmental Health & Safety

Principal Investigator: Lab Location: Date:

		qtys in inventory)	Yes No		Engineering	Administrative	PPE
Radiation 05	Working with self shielded radiation	NA			NA	Area monitors might be required.	
	producing devices (X-ray Irradiator,			Potential for radiation exposure if fail proof		No personal dosimetry is required.	
	XRD units)			mechanism is compromised		Training to operate the machines.	NA
Radiation 06		NA			NA		Lab coat
	Working with Ultraviolet radiation			Corneal damage and Skin redness			UV face shield and goggles
Laser 01	Working with Class 3b laser open	5-500 mW or pulsed 10		Eye and Skin Damage	Beam dumps for stray beam	Access restriction	Protective eyewear appropriate to wavelength
	beam that can produce a direct	J/cm²			Barriers, shrouds, beam stops, etc.	Area controls with NHZ calculation	with correct optical density
	exposure or specular reflection				Interlocks	Administrative and/or procedural controls	
						Education and training	
Laser 02	Working with Class 4 laser open	>500mW or pulsed		Eye and Skin Damage	Beam dumps for stray beam	Access restriction	Protective eyewear appropriate to wavelength
	beam that could result in direct	>10J/cm			Barriers, shrouds, beam stops, etc.	Area controls with NHZ calculation	with correct optical density
	exposure or specular or diffuse				Interlocks	Administrative and/or procedural controls	
	reflection					Education and training	
Laser 03	Enclosed Beam - Exposure during	NA		Eye and Skin Damage	Protective housings should be	Lock out tag out during service	During Service - Protective eyewear
	servicing a Class 3b or 4 laser system				interlocked		appropriate to wavelength with correct optical
	enclosed within a Class 1 device						density
	housing.						
Laser 04	Non-Beam: Repair/service of power	NA		Electrocution and fire	Earthing, good housekeeping	Lock out tag out during service	NA
	source in laser system						
Laser 05	Non-Beam: Working with dyes,	NA		Fire, Carcinogens, Chemical exposure	Containment of chemicals and proper	r MSDS access for chemicals	Lab coats for chemicals, Gloves and
	solvents and chemicals				segregation		appropriate eye protection
Physical 01	Extreme temperatures	N/A		Burns	Ventilated area	General SOP for cryogenic materials	Safety glasses or splash goggles
				Frost bite		Cryogen-specific SOP	Thermal gloves
				Splash			 100% cotton lab coat (cryogenic)
Physical 02	High pressure or vacuum	N/A		Flying debris	Chemical fume hood with blast shield	General SOP for high pressure or vacuum systems	Safety glasses or splash goggles
				Severe skin/eye damage			Face shield
							Chemical-resistant gloves
							• 100% cotton lab coat
Physical 03	Highly energized sources	N/A		Burns; electrocution		Electrical Safety; LOTO;	Non-conductive apparel including gloves
DhiI 04	Malalina Innasian authina	N1/A		D	Non-combustible work surface;	Hat words are seen	• C-f-+: -
Physical 04	Welding, brazing, cutting, glassblowing	N/A		Burns; fire	ventilated area; fire extinguisher	Hot work program	Safety glasses or splash goggles
	giassbiowing				ventilated area, fire extiliguisher		Face shield
							Face snield Chemical-resistant gloves
							Flame-resistant lab coat or Nomex
Physical 05	Open flame (e.g. bunsen burner,	N/A		Burns; fire	Non-combustible work surface;	Generate required SOP(s) for work with open flames	
Physical US	alcohol lab burner, etc.)	11/17		burns, me	ventilated area; fire extinguisher	Generate required 30r(s) for work with open flames	- Jaiery Biasses of shiasif Roggies
	arconor iab burner, etc.)				ventuated area, fire extiliguisher		Face shield
					Consider use of a non-flame		Chemical-resistant gloves
					alternative e.g. micro-incinerator		chemical resistant gioves
					and market eight miles memerator		Flame-resistant lab coat
Physical 06	Sharps (pipet; scalpel; razor blades;			needlestick; puncture; laceration	work bench	BBP	puncture-resistant gloves
	The property searber, razer brades,		1	panetare, idecidadon		==:	F CONDICATIVE BIO 1 CO

Page 3 of 3 revised 12/2015