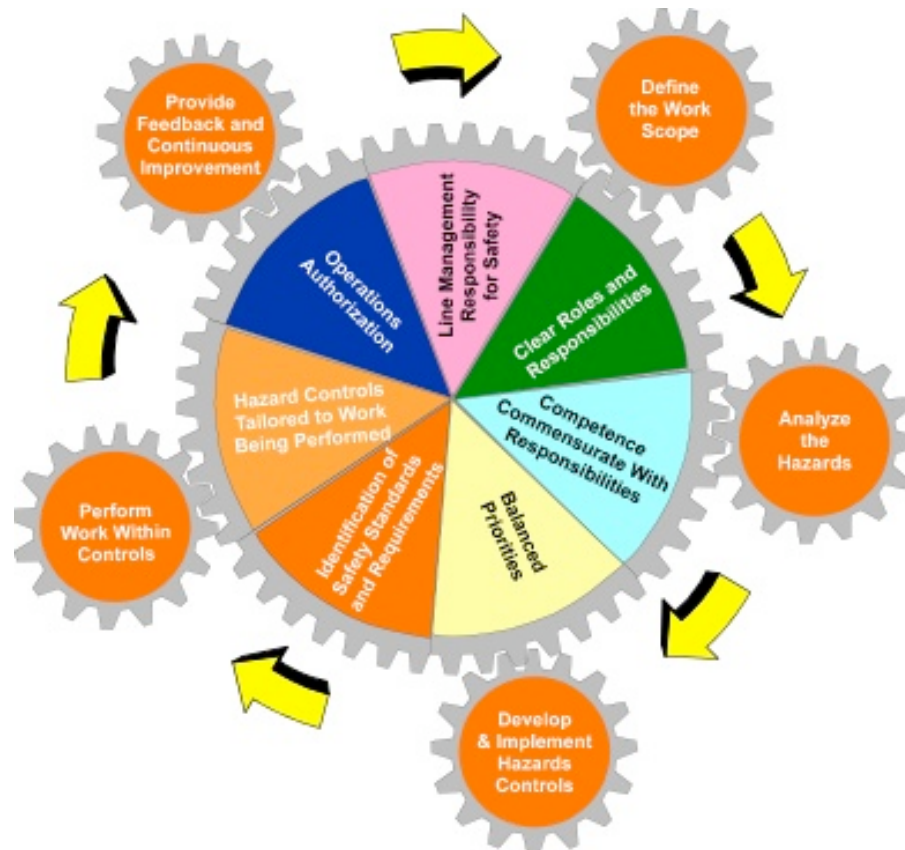


NSTX ES&H IMPLEMENTATION

- NSTX implements Integrated Safety Management (ISM)



NSTX ES&H IMPLEMENTATION

- NSTX ES&H Representative: ES&H Head (who reports to PPPL Director) supports the Project Manager.
- ES&H Resources
 - Electrical Safety
 - Radiation Protection
 - Industrial Hygiene
 - Industrial Safety
 - Laser & RF Safety
 - Environmental Protection
 - Waste Management



NSTX ES&H IMPLEMENTATION

- ES&H Executive Board - senior Lab officials evaluate the effectiveness of PPPL's ES&H Program.
- Safety Review Committee - reviews/approves lab-wide safety documents and project safety assessment documents.
- NSTX Activity Certification Committee (ACC) - conducts safety reviews of proposed NSTX operations and recommends issuance, revisions and constraints on the NSTX Safety Certificate.
 - The Safety Certificate outlines permissible NSTX operations and necessary constraints (i.e., operations authorization).
 - ACC appointed by ES&H Executive Board.
 - DOE-PSO staff participate as resource members of ACC.

NSTX ES&H IMPLEMENTATION

- A Safety Assessment Document (SAD) is maintained for NSTX.
 - Describes NSTX structures, systems and components.
 - Identifies hazards.
 - Addresses design features & administrative controls to mitigate hazards.
 - Includes detailed failure modes and effects analyses of NSTX systems.

NSTX ES&H IMPLEMENTATION

- NSTX work tasks are performed using job hazard analyses (JHAs).



PPPL

PRINCETON PLASMA
PHYSICS LABORATORY

PROCEDURE

No. ESH-004 Rev 3
Attachment 2, page 1 of 1

JOB HAZARD ANALYSIS

Reference:

Work Order # _____ Work Permit # _____ Work Planning # _____ Procedure # _____ Other _____

Written by (Print): _____ Date: _____ Division/Branch/Org: _____

Description & Location (Room/Building) of job/work to be performed:

Hazard (Check-off and <u>Describe</u> the source of the hazard)	Control Measures (Write # of Control(s) in Box)	See Back
<input type="checkbox"/> Chemicals ^a	<input type="checkbox"/> MSDS's Available <input type="checkbox"/> Training Provided	
<input type="checkbox"/> Ergonomic Issues (Repetitive Motion, Lifting, Physical Stresses, etc.) ^b	<input type="checkbox"/> Contact IH for briefing	
<input type="checkbox"/> Ionizing Radiation (Health Physic-HP)	<input type="checkbox"/> Radiation Work Permit (RWP)	
<input type="checkbox"/> Non-ionizing Radiation (Lasers, Magnetic Fields (EMF), RF, etc.)	<input type="checkbox"/> Contact IH for high power lasers/EMF/RF <input type="checkbox"/> Laser Safety Training	
<input type="checkbox"/> Environmental Impacts (Causing Environmental Release, Creating Hazardous Wastes, etc.) (M&ES)	<input type="checkbox"/> Contact M&ES for guidance	
<input type="checkbox"/> Noise ^c	<input type="checkbox"/> Hearing Protection	
<input type="checkbox"/> Sharp objects/tools ^d		
<input type="checkbox"/> Working Surfaces / Tripping Hazards: ^e		
<input type="checkbox"/> Falls / Elevated Work ^f	<input type="checkbox"/> Fall Protection Training	
<input type="checkbox"/> Ladders / scaffolds / manlifts	<input type="checkbox"/> Inspection <input type="checkbox"/> Training	
<input type="checkbox"/> Cranes / rigging / Forklifts	<input type="checkbox"/> Trained/Qualified Personnel	
<input type="checkbox"/> Welding / cutting / grinding / open flame	<input type="checkbox"/> Hot Work Permit (ESU)	
<input type="checkbox"/> Impairing a Security / Fire System (ESU)	<input type="checkbox"/> Contact Security	
<input type="checkbox"/> Hot Surfaces / Cryogenics	<input type="checkbox"/> Cryogenic Training	
<input type="checkbox"/> Heat or Cold Stress ^g		
<input type="checkbox"/> Steam		
<input type="checkbox"/> Electrical ^h (Electrical Safety)	<input type="checkbox"/> Lockout/Tagout <input type="checkbox"/> Arc Flash Analysis ^a <input type="checkbox"/> GFCI <input type="checkbox"/> Trained Personnel	
<input type="checkbox"/> Confined Space / Oxygen Deficiency	<input type="checkbox"/> Confined Space Permit	
<input type="checkbox"/> Machinery / Machine tools	<input type="checkbox"/> Machine Guards <input type="checkbox"/> Chip Guards	
<input type="checkbox"/> Hand Tools / Power Tools ⁱ	<input type="checkbox"/> GFCI	
<input type="checkbox"/> Eye Hazards ^j		
<input type="checkbox"/> Falling Objects		
<input type="checkbox"/> Potential / Stored Energy ^k		
<input type="checkbox"/> Foot Hazard	<input type="checkbox"/> Safety Shoes	
<input type="checkbox"/> Trenching / Digging	<input type="checkbox"/> Digging Permit	
<input type="checkbox"/> Wall / Floor Penetrations	<input type="checkbox"/> Penetration Permit	

For questions about these topics, contact Industrial Hygiene (IH) except where noted in [brackets].
IH = 2533, 2531, 46546, 639. HP = 2311, 2315. M&ES = 3380. ESU/Security = 2536, Electrical Safety = 3740

NSTX ES&H IMPLEMENTATION

- Annual Management Safety Walkthrus conducted of the NSTX facility.
- Special safety walkthroughs conducted by ACC for new/modified installations with safety implications.
- Line supervision performs monthly safety walkthroughs & frequent worker observations.



NSTX SAFETY RECORD: FY 2004-2008

- FY 2004
 - No DART cases
 - One (1) Recordable Injury Case
 - One (1) 1st aid case

- FY 2005
 - One (1) DART case.
 - Two (1) Recordable Injury Cases
 - One (1) 1st aid case

- FY 2006
 - No DART cases.
 - No Recordable Injury Cases
 - One (1) 1st aid case



NSTX SAFETY RECORD: FY 2004-2008

- FY 2007
 - No DART cases
 - Two (2) Recordable Injury Cases
 - No 1st aid cases
- FY 2008 (thru 6/30/08)
 - No DART cases.
 - One (1) Recordable Injury Case
 - No 1st aid cases
- NSTX received a special NJ State award in March 2008 for working 7 consecutive years (1/1/01-12/31/07) without an away from work case.

NSTX RADIOLOGICAL SAFETY

NSTX Radiological Limits and Design Objectives

Condition		P, Probability Of Occurrence In A Year	Public Exposure		Occupational Exposure	
			Regulatory Limit (rem per yr)	Design Objective (rem per yr)	Regulatory Limit (rem per yr)	Design Objective (rem per yr)
Routine Operation	Normal Operations	P-1	0.1 total 0.01 airborne 0.004 drinking water	0.01 total	5	1
	Anticipated Events	$1 > P \geq 10^{-2}$	0.5 total (including normal operation)	0.05 per event		
Accident	Unlikely Events	$10^{-2} > P \geq 10^{-4}$	2.5	0.5	Per ES&H Manual	Per ES&H Manual
	Extremely Unlikely Events	$10^{-4} > P \geq 10^{-6}$	25	5	Per ES&H Manual	Per ES&H Manual
	Incredible Events	$P < 10^{-6}$	NA	NA	NA	NA



NSTX RADIOLOGICAL SAFETY

- NSTX Test Cell is posted as a Radiologically Controlled Area.
- Neutral beam work involving tritium contaminated components is controlled by Radiation Work Permits (RWPs).
- Radiological monitoring (gammas, neutrons, tritium) is performed for NSTX.
- Maximum annual dose to the public from all PPPL operations (including NSTX) is <0.02 mrem/yr.



ES&H INITIATIVES

- Began implementing DuPont Safety Training Observation Program (STOP™) for Supervisors in May 2008 to help reinforce safe behaviors and correct unsafe behaviors.

THE STOP™ SAFETY OBSERVATION CYCLE			
DECIDE	STOP	REPORT	ACT
STOP			OBSERVE
STOP™ Audit Checklist			
Mark if <input type="checkbox"/> any unsafe	Mark if <input type="checkbox"/> all safe	Mark if <input type="checkbox"/> any unsafe	Mark if <input type="checkbox"/> all safe
Reactions of People	Personal Protective Equipment	Head-to-Toe Check	
<input type="checkbox"/> Adjusting Personal Protective Equipment <input type="checkbox"/> Changing Position <input type="checkbox"/> Rearranging Job <input type="checkbox"/> Stopping Job <input type="checkbox"/> Attaching Grounds <input type="checkbox"/> Performing Locks <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Head <input type="checkbox"/> Eyes and Face <input type="checkbox"/> Ears <input type="checkbox"/> Respiratory System <input type="checkbox"/> Arms and Hands <input type="checkbox"/> Trunk <input type="checkbox"/> Legs and Feet <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Right for the Job <input type="checkbox"/> Used Correctly <input type="checkbox"/> In Safe Condition <input type="checkbox"/> _____	
Positions of People	Tools and Equipment	Procedures	
Injury Causes <input type="checkbox"/> Striking Against or Being Struck by Objects <input type="checkbox"/> Caught In, On, or Between Objects <input type="checkbox"/> Falling <input type="checkbox"/> Contacting Temperature Extremes <input type="checkbox"/> Contacting Electric Current <input type="checkbox"/> Inhaling, Absorbing, or Swallowing a Hazardous Substance <input type="checkbox"/> Repetitive Motions <input type="checkbox"/> Awkward Positions/ Static Postures <input type="checkbox"/> _____ <input type="checkbox"/> _____	<input type="checkbox"/> Available <input type="checkbox"/> Adequate <input type="checkbox"/> Known <input type="checkbox"/> Understood <input type="checkbox"/> Followed <input type="checkbox"/> _____	<input type="checkbox"/> Known <input type="checkbox"/> Understood <input type="checkbox"/> Followed <input type="checkbox"/> _____	
MS-10142 D12304695			

Complete the Observation Report	
Conditions	
<input type="checkbox"/> Tools and Equipment	<input type="checkbox"/> Environment
<input type="checkbox"/> Structures and Work Area	<input type="checkbox"/> Orderliness
Safe Acts Observed	
Actions Taken to Encourage Continued Safe Performance	
_____ _____ _____ _____	
Unsafe Acts Observed	
Immediate Corrective Action	
Action to Prevent Recurrence	
_____ _____ _____ _____	
Name _____	Shift _____
Area _____	Date _____
<small>Additional copies of this STOP™ Audit Checklist can be obtained by calling a DuPont Safety Resources location: see www.dupont.com/stop. Copyright © 2004 E.I. du Pont de Nemours and Company. STOP™ and the STOP™ logo are trademarks of E.I. du Pont de Nemours and Company.</small>	