



## **Worker Safety and Health Annual Industrial Hygiene Monitoring Plan FY 2008**

### **1. Purpose**

The purpose of the annual industrial hygiene monitoring plan is to establish priorities for industrial hygiene monitoring during the upcoming year. BNL is continuing our monitoring scheme for FY2008 to assess, document and monitor worker exposures. The Plan includes three parts: this Plan, the Compliance Suite exposure monitoring database, and the IH Scheduler.

Monitoring priorities are based on regulatory compliance, a need for quantitative hazard evaluation data, and the estimated risk of hazards. The IH Group at BNL will continue to conduct interviews with each directorate and identify, through discussions with Safety and Health Coordinators, areas of concern for monitoring during FY2008.

In addition, during the first quarter of FY08 the reported results and hazard analyses provided by our FY07 IH Baseline Monitoring consultant will be reviewed during the course of FY08. Monitoring requirements recommended by the consultant will be added/updated in the IH Scheduler. Where the consultant has analyzed activities, through the ESR reviews and monitoring reports, and determined a reduced schedule or elimination of monitoring, these items will be altered/removed from the IH Scheduler.

### **2. IH Monitoring Goal Setting**

The primary goals for FY08 are:

- Continued implementation of the IH Scheduler for routine monitoring and
- Completion of the IH baseline monitoring program by September 30, 2008. This will be accomplished through an extension of the IH Baseline Monitoring consultant contract.

Completion of the IH Baseline monitoring is determined as conducting a single monitoring event on all operations at BNL.

To establish the goals, the following criteria are used:

- Compliance with regulatory (OSHA/DOE) standards/guidance
- Relative risk to worker and assignment of Similar Exposure Groups
- Needs of the Department/Directorate
- Special Emphasis programs identified by the IH Group

Goals for the FY2008 plan were determined using the following inputs: IH and ESH coordinator staff discussions; a review of chemical inventories; a review of worker concerns; anticipated and known worker exposures. Additional information was gathered through reviews of: recent accidents/injuries; recent OSHA/DOE inspection findings; lessons learned; and assessment of need by departments.

### **3. Prioritization of Monitoring Strategies for Specific Stressors**

IH stressors at BNL include: asbestos, beryllium, cadmium, carcinogens, chemicals, heat/cold stress, lead, noise, non-ionizing radiation, reproductive hazards, silica, and welding. Additional stressors might include areas such as ergonomics. However, these areas are not part of this monitoring strategy.

Priority stressors have been established and will be the focus of IH monitoring throughout FY2008. The top three priorities for BNL lab-wide this year are:

- Noise – personal dosimetry [priority criteria: BNL has identified exposure issues]
- Silica – [priority criteria: ACGIH reduction in TLV]
- Chemicals
  - carcinogens (especially Cr+6; priority criteria OSHA reduction in PEL)
  - other particularly hazardous substances
  - chemicals used in large quantities
  - soldering stations – primarily as a dermal exposure route
- Non-Ionizing Radiation – (all unmonitored & modified sources; or when monitoring >4 years ago)

The priority stressors for each department will vary. Each department has a different set of IH stressors due to the type of activities they conduct. For any department that does not have one or more of the BNL priority stressors noted above, the Safety and Health Representative will determine the next highest need based on a hazard ranking scheme as described below.

## **4. Exposure Characterization, Hazard Ranking and Sampling Frequency**

The IH Scheduler has been developed and is being implemented to detail the completion of baseline IH monitoring required for regulatory compliance. Using the number of monitoring events and average estimates of time for each event, the resource need is generated for each department. This tool ranks the monitoring events and establishes the frequency for future sampling events based on the rank profile.

Compliance Suite IH module is currently the single electronic source for IH monitoring data. All IH monitoring samples are documented in the database with specific information pertaining to the samples.

### **Exposure Assessments (EA)**

This monitoring plan uses the following EA strategy:

Qualitative Exposure Assessment	Hazard Characterization	Need determined primarily through Work Planning; review of existing data; area monitoring (ex. Noise); and ESH coordinator input
	Scope/Screen for exposure potential	
	Analyze and Interpret Results	
Quantitative Exposure Assessment	Prevention and Controls	Annual IH Monitoring Plan based on review of analytical data and interpretive reports.
	Develop quantitative Monitoring Plan	
	Conduct Exposure Monitoring	
Medical Monitoring	Determine need for and periodicity of re-evaluations	Data is input to Compliance Suite for OMC review and OMC is on IH report distribution list.
	Review with OMC exposure and medical data as required; re-monitor as necessary	

In some instances, BNL will provide non-monitoring, qualitative assessments. This type of assessment would include: exposures to items that do not have regulatory OELs or methods for monitoring and analysis such as biological materials/organisms

and pesticides; and theoretical assessments based on a quantitative analysis of the exposure potential.

Examples of hazard assessments based on exposure potential might include the use of extremely small quantities.

For instance, a S&H representative may determine through calculations that if all of the material were instantaneously aerosolized the airborne level would be below 10% of the OEL and ventilation would lessen exposures further. In this instance, there is essentially very low risk of overexposure.

Hazard assessments by the IH Baseline Monitoring contractor have shown very low exposure potential using small quantities of highly volatile chemicals when manipulated in an approved, chemical fume hood. Again, there is essentially very low risk of overexposure.

### **Ranking Exposure Monitoring Data**

The IH Scheduler is used to rank monitoring data, assess the need for additional monitoring and schedule future monitoring. The following criteria are used by the Safety and Health Representative to establish the IH monitoring schedule:

Risk Category	Exposure Level	Relative Risk	Frequency of Monitoring
<b>A</b>	Worker exposure exceeds OEL on TWA <sub>8</sub>	Significant risk	All workers in SEG during each job until PPE requirements characterized, then all workers quarterly
<b>B</b>	Area exposure level exceeds OEL but worker exposure is <TWA <sub>8</sub> based on duration in area	May be at significant risk. Needs further evaluation: compliance with OEL uncertain	25% of workers in SEG, quarterly
<b>C</b>	Area/worker exposure is >10% of OEL to OEL level	Moderate risk	10% of workers once per year
<b>D</b>	Area/worker exposure <10% of OEL.	Low risk	1 representative sample per year for three years, then one sample per 3 year cycle
<b>U</b>	Unknown area/personal exposure	Risk assigned on best available guidance	Sample on next operation(s) until characterized as A-D

BNL will use 10-25% of the OEL as the Administrative Control Limit (ACL). This will be confirmed or changed as needed by continual review of monitoring data and hazard analyses as they become available. The ACL is not to be viewed as a modified OEL but rather as a level for decision making with respect to regulatory compliance and for determining the need for additional monitoring.

The IH monitoring data will be reviewed by a Senior Industrial Hygienist and incorporated into exposure assessments (EAs). The EAs will be integrated into the existing programs, experiments and operations. The IH Monitoring Plan will be reviewed and updated on an annual cycle by the IH Group manager.

Authorized and Approved By:

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Author Name	Signature (on file)	Date

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Approval	Signature (on file)	Date