

BROOKHAVEN NATIONAL LABORATORY Safety & Health Services Division	NUMBER IH60600
	REVISION Final Rev1
INDUSTRIAL HYGIENE GROUP Standard Operating Procedure	DATE 06/01/07
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SUBJECT: Negative Exposure Assessments	

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1.0 Purpose & Scope

This document describes the SHSD Industrial Hygiene Group (IHG) procedure for analyzing, documenting, and retrieving Negative Exposure Assessments (NEAs) that are based on personal exposure monitoring. It provides a system for converting personnel sampling results into data that can characterize work controls on future operations for Similar Exposure Groups.

The goal of the procedure is to provide a uniform protocol for documenting negligible personnel exposure potential operations so that the information is available for predicting worker exposure and recommending controls on future operations of identical nature.

This NEA process does not apply to work that has:

- a potential for rapid changes in operations or exposure potential or
- covered by requirements or regulations that take precedence over the hazard assessment process with prescriptive requirements for measuring exposure on each event (such as the OSHA Confined Space standard).

2.0 Responsibilities

- 2.1 **Program Administration:** This procedure is administered through the SHSD Industrial Hygiene Group.

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2.2 Members of the SHSD Industrial Hygiene Group and other BNL organizations that provide BNL with field monitoring services are required to follow this procedure.

3.0 Definitions

Industrial Hygiene Professional: A person designated by their Division Manager/Department Chair to conduct industrial hygiene hazard assessments and that has met the qualification requirements set by the BNL Unified IH Qualification criteria set in IH50300.

4.0 Prerequisites See qualification in Section 7.

5.0 Precautions

Personal Protective Equipment: Personal protective equipment when preparing negative exposure assessment report is not required.

6.0 Procedure

6.1 Equipment: Office supplies (including: file cabinets, folders, computers, and electronic media).

6.2 Pre-conditions for a NEA:

- Exposure Assessment Sampling: Documented exposure measurements are the basis for NEA on chemical hazards, physical hazards, biological agents, and ergonomic stressors. All measurements must have followed the assessment methodology in IH60100 and IH60500.
- When quantitative monitoring determines employee exposure to be less than Occupational Exposure Limits (i.e. no significant worker exposures above all ACGIH & OSHA TWA-8, STEL, Ceilings, Action Levels, and Excursion Limits) and the operation is often repeated under identical circumstances of work patterns,

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work methods, work controls, work duration and environmental factors, a Negative Exposure Assessment may be generated.

- A Negative Exposure Assessment can not be based on sampling data that is more than 24 months old (unless an OSHA Standard requires more frequent monitoring). However, an existing NEA, which is based on sampling data that was generated more than 24 months before, will be considered valid if the operation has not changed and at least one new sampling event is monitored and the results are consistent with previous results.
- For highly variable operations, such as Asbestos Abatement covered under 29CFR1926.58, a Negative Exposure Assessment can not be based on sampling data that is more than 12 months old. For Asbestos related NEA, the sampling data must be verified with at least one exposure monitoring sample at least every 12 months.
- When a published study presents data that is identical to an exposure scenario at BNL, that study can be used to make a “Negative Exposure Assessment” for BNL operations. At least one additional sampling event must be monitored at BNL and the results must be consistent with published data. Every 24 months at least one additional sampling event must be monitored and the results must be consistent with previous results.
- The operation can be during either normal conditions or upset conditions as long as the NEA clearly indicates the frequency/duration of exposure and the parameters in place during the sampling.
- The sampling data must be obtained using a worker worn exposure sampling device, unless worker worn sampling device is not technologically available. The sampling device is to have been worn on the workers body in the manner that represent the likely route of exposure (in the breathing zone for inhalation hazards, by the ear for noise hazards, and on the body facing the source for non-ionizing radiation sources).
- A Fixed Breathing Zone/Exposure Zone Sample is only to be used for determining a NEA when the only feasible sampling technique is not portable and can not be worn by the worker. This type of sample must measure worker exposure potential at the location where the worker is located during exposure.

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- Area Samples alone are not an adequate basis for a NEA. This type of sample can be used to strengthen the conclusions that can be drawn from personnel sample and add more detail to determine the exact route and pattern of exposure.

6.3 Prepare a written report with the required content for the NEA listed in Attachment 9.1.

6.4 **Documentation:** The *IH Professional* maintains documentation for the NEA at BNL in the following manner:

- The *original* NEA form is to be provided to the SHSD IHG [Document & Record Custodian](#). The SHSD IHG [Document & Record Custodian](#) files the documentation in a manner approved by BNL record retention policy and in compliance with OSHA and DOE regulations.
- The *IH Professional* may keep unofficial copies of the files for personal reference. These are to be marked "COPY".
- The IH Group makes the NEA accessible on the SHSD Standard Operating Procedure Web page.

6.5 **Distribution of Copies to Responsible Individuals:** The IH Professional originating the NEA should distribute a copy of the NEA (or link to NEA on the web page) to appropriate:

- Work Planners
- ESH Coordinators
- Line supervisor of employees.
- SHSD Safety & Health Representative
- Other IH Professionals with an interest in the process covered by the NEA.

7.0 Implementation and Training

Qualification Criteria: Only individuals who have knowledge of this procedure and extensive experience in IH hazard assessments or certification in industrial hygiene will be qualified to prepare a NEA described in this procedure. Personnel are to meet the performance measures set forth in *Attachment 9.2 JPM Qualification record*. This qualification is to be completed on a three year cycle.

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8.0 References

- 8.1 DOE G 440.1-3” DOE Implementation Guide for Use with DOE Order 440.1: Occupational Exposure Assessment
- 8.2 AIHA Strategy for Occupational Exposure Assessment

9.0 Attachments

- 9.1 Negative Exposure Assessment Report Format
- 9.2 Job Performance Measure form - HP-IHP-60600

10.0 Documentation

Document Development and Revision Control Tracking		
PREPARED BY: <i>(signature and date on file)</i> R. Selvey Date: 02/16/06	REVIEWED BY: <i>(signature and date on file)</i> J. W. Peters Date: 04/12/06	APPROVED BY: <i>(signature and date on file)</i> R. Selvey; IH Manager Date: 04/24/06
ESH Coordinator/ Date: <i>none</i>	Work Coordinator/ Date: <i>none</i>	SHSD Manager / Date <i>None</i>
QA Representative / Date: <i>none</i>	Training Coordinator / Date: <i>none</i>	Filing Code: IH52
Facility Support Rep. / Date: <i>none</i>	Environ. Compliance Rep. / Date: <i>none</i>	Effective Date: 04/24/06
ISM Review - Hazard Categorization <input type="checkbox"/> High <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Low/Skill of the craft	Validation: <input type="checkbox"/> Formal Walkthrough <input type="checkbox"/> Desk Top Review <input type="checkbox"/> SME Review Name / Date:	IMPLEMENTATION: Training Completed: tracked in BTMS Procedure posted on Web: 06/01/07 Hard Copy files updated: 06/01/07 Document Control: 06/01/07

Revision Log		
Purpose: <input type="checkbox"/> Temporary Change <input type="checkbox"/> Change in Scope <input type="checkbox"/> Periodic review <input checked="" type="checkbox"/> Clarify/enhance procedural controls		
Changed resulting from: <input type="checkbox"/> Environmental impacts <input type="checkbox"/> Federal, State and/or Local requirements <input type="checkbox"/> Corrective/preventive actions to non-conformances <input type="checkbox"/> none of the above		
Section/page and Description of change: Corrected error in Attachment 9.2 heading.		
R. Selvey 06/01/07 <i>(signature on file)</i> SME Reviewer/Date:	Reviewer/Date:	Reviewer/Date:

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Attachment 9.1

Sample, See the IH Web Page
for an Editable version

Negative Exposure Assessments Report Format

The following information is to be incorporated into a Negative Exposure Assessment report.

1. NEA Title: One line description of the operation that identifies the hazard and work conditions.
 - Example: *Lead surface wipe sampling.*
2. Expiration Date/ Renewal Date: The date the sampling data will reach two year maturity. If additional sampling data is collected that verifies the NEA is still valid, then the Expiration Date can be extended by Renewal for two years (except 1 year for Asbestos and other OSHA Standards requiring annual monitoring)
3. Hazard: List the type and sources of potential health hazards (e.g., chemical, physical, or biological agents and ergonomic stressors). Provide the exact name of chemicals/hazards sampled and other hazards represented by the NEA.
 - Example: *This NEA covers the routine handling of up to 100 lead bricks or 30 minutes of handling of lead bricks. The bricks covered by this NEA would be characterized as non-coated and heavily oxidized.*
4. Task Done: A description of the operation and associated work activities/tasks.
 - Example: *The work consists of wet rag wiping of up to 100 lead bricks to remove oxidation, wrapping them with plastic tape, and stacking the bricks on a pallet for shipment.*
5. Task frequency & normalcy: State whether the NEA describes the route of exposure on a typical day or an emergency, spill, accident, unplanned event, etc.
 - Example: *This NEA represents a frequent event in the maintenance cycle of the pump. It is performed typically every 40 to 60 days in a similar manner to the work done during supporting sampling.*
6. Exposure Pattern Normalcy: State the exposure patterns, in terms of frequency, duration, and intensity that the NEA represents. The NEA must include a statement that no other exposure to the hazard can occur on the day of exposure of an operation covered by the NEA.
 - Example: *This operation is conducted in a similar manner each time, only two workers are in the exposure zone. Exposure can be higher when the fan is not running and this NEA does not represent that scenario.*
7. Indoors/outdoors: Describe in the NEA if it is applicable to indoor areas, outdoors, or both. If outdoors, state the weather represented in the NEA, including temperature, wind speed, and wind direction relative to the worker).

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- Example: *This operation is conducted outdoors. The NEA is not applicable on a very windy day or when the workers can not be upwind of the source.*
8. Compounding Environmental Factors: Describe significant environmental conditions/factors that could affect worker exposure potential and negates the NEA.
 - Example: *This NEA is not applicable if the operation is conducted on a very hot day. A fan used to cool the worker may cause excessive dust so that exposure potential may be higher than typical.*
 - Example: *This NEA is not applicable if the operation is conducted indoors.*
 9. Worker location: State the worker(s) required or typical operation.
 - Example: *The operator must be stationed at the control panel throughout the work period. Any other location is not represented by this NEA.*
 10. Worker Protection needs: State required PPE (e.g., respiratory protection or other PPE). Describe any required additional control measures, (including engineering, administrative, work practice controls, and/or personal protective equipment), to reduce worker exposure.
 - Example: *The workers must wear Level C suits, with gloves and boots. A full face APR with OVC must be worn during the spraying operation.*
 11. OEL: Identify the applicable occupational exposure limits/industrial hygiene standards, including ACGIH, OSHA, and DOE Exposure Standards e.g., 8-hour time-weighted average (TWA) concentration, short-term exposure level (STEL), peak or ceiling concentration, or average sound pressure level, dBA, and Action Levels. Provide a quantified rate of exposure, i.e. determine personal exposure level per unit time of exposure. Determine the length of time that the work can be conducted with worker exposure level in compliance with recognized occupational exposure standards, e.g., 8-hour time-weighted average (TWA) concentration and short-term exposure level (STEL). Describe the impact on exposure if the work duration is a full day.
 - Example: *If this operation is done for 30 minutes or less.*
 12. Need for Medical Surveillance: State if medical surveillance is required.
 13. Need for new or additional Training: State if additional training is needed for the exposed workers.
 14. List all sampling data and reports utilized in the exposure determination, including the chain of custody, field sampling forms, and laboratory results.

**Negative Exposure Assessment Reporting
Job Performance Measure (JPM) Completion Certificate**

Candidate's Name	Life Number:
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SHSD Procedure Knowledge

Practical Skill Evaluation: Demonstration of Evaluation Methodology

Criteria	Qualifying Performance Standard	Unsat.	Recov.	Satisf.
1. Assessment Protocol	Understands the assessment logic necessary to appropriately select sampling locations to accurately measure worker exposure potential.			
2. Exposure Standards	Demonstrates knowledge of each applicable occupational exposure limit, action level, TLV, PEL, STEL, etc.			
3. Exposure Assessment Strategy	Demonstrates sufficient knowledge of the principles in Attachment 9.2 Fundamentals of the BNL Exposure Assessment Strategy from IH60500.			
4. Negative Exposure Assessment Strategy	Demonstrates sufficient knowledge of the principles in Attachment 9.1 of this SOP in the criteria for and content of a NEA.			
5. Hazard Analysis	Demonstrates knowledge of the various types of IH hazards and conditions, and the essential steps in performing a meaningful hazard analysis of the work operation and area.			
6. Analysis of data	Shows how to perform the data analysis to assess potential exposure to the worker.			
7. Assessment Report Content	Demonstrate the knowledge that all items in Attachment 9.1 must be addressed in the assessment report and states commitment to meet its requirements.			
8. Distribution of copies	Demonstrates how to correctly distribute the NEA to workers, supervision, and ESH professionals.			

I accept the responsibility for performing this task as demonstrated within this JPM and the corresponding SOP.

Candidate Signature:	Date:
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I certify the candidate has satisfactorily performed each of the above listed steps and is capable of performing the task unsupervised.

Evaluator Signature:	Date:
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