



DEPARTMENT OF THE NAVY

NAVAL HOSPITAL JACKSONVILLE
BRANCH HEALTH CLINIC
MARINE CORPS LOGISTICS BASE
814 RADFORD BOULEVARD
ALBANY, GEORGIA 31704

IN REPLY REFER TO:
6260
Ser 01/837
25 Sep 13

From: Officer in Charge, Naval Branch Health Clinic, Albany, GA
To: Director, Fleet Support Division, Albany GA

Subj: COMPREHENSIVE INDUSTRIAL HYGIENE SURVEY

Ref: (a) OPNAVINST 5100.23G
(b) NAVMC DIR 5100.8

Encl: (1) Executive Summary
(2) Industrial Hygiene Survey Report

1. Per references (a) and (b), a comprehensive Industrial Hygiene Survey of your command was conducted. Enclosures (1) and (2) are provided for your information.

2. The point of contact for this report is Mr. John Sorenson, Head, Industrial Hygiene Division, Naval Branch Health Clinic. He may be reached at 639-7846 or by e-mail at john.sorenson@med.navy.mil.

A handwritten signature in black ink, appearing to be "R. M. Bristol", written over a circular scribble.

R. M. BRISTOL

Copy to:
Risk Management Office, MCLB Albany

EXECUTIVE SUMMARY

A comprehensive industrial hygiene survey of Fleet Support Division (FSD) was conducted during December 2012 by Mr. John Sorenson, Industrial Hygienist, of Naval Branch Health Clinic (NBHC) Albany. The purpose of this survey was to identify health hazards present, assess actual health risk, and recommend controls where needed, as well as to assess your Occupational Health program status.

No formal response to the NBHC Albany Industrial Hygiene Division is needed, although recommendations made in this report may be specified as items for mandatory corrective action by the Fleet Support Division Safety Officer.

The assistance of your Safety Officer (Mr. Joseph Carson) greatly facilitated the completion of this survey and is much appreciated.

Attachment (1) to enclosure (2) of this report provides an overall evaluation summary. Attachment (2) provides shop/process-specific individual work center hazard assessments. These are intended to be disseminated to the work areas. If there are any changes in work operations from what is described in this report, or if a focused health hazard evaluation of a specific work operation or new project is needed, please contact Mr. John Sorenson via email at john.sorenson@med.navy.mil or at 639-7846.

The following significant issues were found during this survey:

Field Findings.

Exhaust ventilation systems that attach directly to a vehicles tail pipe are an excellent way to protect employees when vehicle maintenance, repair or testing requires their engines to be run indoors. Several of these ventilation tubes were, however, ripped and shredded. These hoses need to be repaired or replaced if vehicles are going to be run indoors.

The new sealed lead acid batteries used in the forklifts inside of the warehouses will reduce fumes at the charging stations. This is a positive modification to the work place.

The ventilation fans in Building 1426 are triggered by a Carbon Monoxide sensor illustrating another positive improvement to the work place.

Respiratory Protection.

FSD employees use preservatives, paints and spray paints in their work. These are all listed on their Authorized User's List (AUL) and Material Safety Data Sheets (MSDS) are present. Employees that spray these chemicals (with the exception of small scale touch up spray painting) wear respirators and are on the base Respiratory Protection Program.

Medical Surveillance

Medical surveillance recommendations are listed in attachment (4) to enclosure (2). Current medical surveillance recommendations are valid.

Please note that the following examinations are not listed in attachment (4):

- Medical certifications (those examinations which are required by specific Navy or Federal directive where a certain degree of physical fitness has been judged as necessary for a component of the job (i.e. respirator use) or the job itself (i.e. forklift operators or security guards). These are specified by the command itself, not by Industrial Hygiene.
- Ionizing Radiation examinations, which are not specified by Industrial Hygiene, but rather by the Radiation Safety Officer.
- The requirement for a medical surveillance program for "sight conservation" is no longer Navy policy (see OPNAVINST 5100.23G, chapter 19). Position-specific requirements for visual acuity remain, but specification of such is outside the scope of Industrial Hygiene.

COMPREHENSIVE INDUSTRIAL HYGIENE SURVEY
Fleet Support Division
Report Number: AL12002

Ref: (a) OPNAVINST 5100.23G, *Navy Occupational Safety and Health Program Manual*
(b) NAVMC DIR 5100.8, *Marine Corps Occupational Safety and Health (OSH) Program Manual*

Att: (1) Evaluation Summary
(2) Individual Hazard Assessment
(3) Exposure Monitoring Plan
(4) Medical Surveillance Summary
(5) Glossary of Terms

1. **Introduction.** Per references (a) and (b), a periodic industrial hygiene survey of Fleet Support Division (FSD) was conducted during the month of December 2012 by Mr. John Sorenson, Industrial Hygienist, Naval Branch Health Clinic, Albany, GA. The survey consisted of site visits, walk-through evaluations of all work areas, a review of applicable policies, and employee interviews as appropriate to assist in the industrial hygiene assessment.

2. **Report Purpose and Use.** The purpose of this survey is to identify and assess chemical and physical health hazards that are present within FSD work areas, evaluate controls present and recommend modified or additional controls where necessary, and identify hazard-based medical surveillance needs. To this end, this survey contains the following:

a. An evaluation summary of NAVOSH programs, control measures, and hazard evaluations, provided as attachment (1).

b. The updated Individual Hazard Assessments for each shop/code, provided in attachment (2). These describe significant operations/processes that may produce health hazardous exposures, as described by shop supervisors.

c. The Exposure Monitoring Plan (EMP), provided as attachment (3). This describes the plan that Industrial Hygiene will follow in the next year to measure exposures to chemical and physical hazards. This is provided for your information only; execution of the EMP is the responsibility of the Industrial Hygiene Division.

Enclosure (2)

d. A summary of current medical surveillance recommendations, is provided as attachment (4).

e. A glossary of Industrial Hygiene terminology is provided in attachment (5).

3. Re-evaluation Schedule and Changes in the Workplace. Please retain this report on file. NBHC Industrial Hygiene will re-evaluate FSD every two years. However, any significant change in the type of operations performed, workplace setting, or change in the kind or amount of chemicals used will result in a need for a re-evaluation of the affected area. NBHC Albany Industrial Hygiene should be notified of such changes.

EVALUATION SUMMARY
 PERIODIC INDUSTRIAL HYGIENE SURVEY
 FLEET SUPPORT DIVISION
 AL12002

Reference Report

The most recent previous Industrial Hygiene survey report is NBHC Albany ltr. 6260/Ser.560 of 21 DEC 2010.

New or Significantly Modified Work Center Operations/Processes?

- No *significant* changes in operations/processes were identified. *
- The following changes were identified:

*For purposes of this survey, "*significant* changes" are defined as workplace modifications that require a change in recommended medical surveillance enrollment, personal protective equipment, or exposure control measures (ventilation, etc).

Program Findings and Recommendations

1. Medical Surveillance Program Status. Attachment (4) provides a summary of current medical surveillance needs.

- No Medical Surveillance is Recommended.
- Medical Surveillance is Recommended.
- No Change in Medical Surveillance Recommendations.
- Medical Surveillance Recommendations have changed as follows:

Comments:

2. Hazardous Material Control and Management (HMC&M) Program:

- AUL Y N N/A Accurate Y N
- MSDS Files Y N N/A Accurate Y N
- HAZMAT Training Required? Y N (Note: IH does not track training completion).
- Other (lead, asbestos, etc): Lead Y N (Note: IH does not track training completion)

Comments:

3. Management of Reproductive Hazards:

- Reproductive Hazards Present? Y N
- Any change from previous survey? Y N

Comments: Noise is a developmental reproductive hazard. Although there are no spaces where a TWA is expected to reach 85 dBA, hearing protection is recommended when using power tools.

4. Noise and Hearing Conservation Program (HCP):

- Are personnel recommended for the HCP? Y N
- Are personnel receiving audiograms? Y N N/A (Note: IH does not track training completion)
- Is hearing protection readily available? Y N N/A
- Is hearing protection used? Y N N/A Not Available for Observation

Comments: FSD has 23 employees on the HCP, 100% are current on their exams.

5. Respiratory Protection:

- Are respirators used to control workplace exposures? Y N
- Are they effective? Y N N/A
- Is the Respiratory Protection Program satisfactory? Y N N/A

Comments: The M2 shop personnel that perform the P-19/Phoscode preservation process are enrolled in the RPP.

6. Ventilation:

- Are ventilation systems used to control workplace exposures? Y N
- Are the systems effective and operating properly? Y N N/A

Comments: The M2 shop (BLDG 1426) employs engineering control (Local Ventilation) system located at the source of the paint sprayers and engine exhaust. Several of these engine exhaust ventilation tubes are severely torn and leak.

7. Ergonomics:

- Ergonomic risk factors were identified pertaining to shop work office/computer work
- Available equipment/furniture incorporates good ergonomic design? Y N N/A
- Ergonomic training recommended? Y N (Note: IH does not track training completion)

Comments and/or Recommendations: Lifting tools are available and utilized to reduce Ergonomic risk in the shop areas.

<p>8. Other Applicable Programs:</p> <p><input type="checkbox"/> Lead Control</p> <p><input type="checkbox"/> Asbestos Control</p> <p><input type="checkbox"/> Carcinogens</p> <p><input type="checkbox"/> Other</p> <p>Comments:</p>
<p>Consultative or Special Surveys/Findings Since the Previous Survey: <input checked="" type="checkbox"/> (check if none)</p>
<p align="center">Changes to Specific Workplace Evaluations and Monitoring Plan</p>
<p>1. Workplace Assessments:</p> <p><input checked="" type="checkbox"/> No significant change to workplace assessment information was identified.</p> <p><input type="checkbox"/> The following significant workplace assessment changes were identified:</p>
<p>2. Exposure Assessment:</p> <p><input type="checkbox"/> New exposure data were obtained since the prior evaluation and are summarized below</p> <p><input checked="" type="checkbox"/> No change in any exposure assessment was identified as part of the survey or from sampling data.</p> <p><input type="checkbox"/> The following changes in exposure assessments were identified:</p> <p>Comments:</p>
<p>3. Findings and Recommendations:</p> <p><input checked="" type="checkbox"/> There were no significant findings identified during this survey that require corrective action.</p> <p><input type="checkbox"/> The following significant findings were identified:</p>
<p>4. Exposure Monitoring Plan. Attachment (3) provides the current Exposure Monitoring Plan.</p> <p><input type="checkbox"/> Exposure monitoring needs were identified.</p> <p><input type="checkbox"/> No exposure monitoring needs were identified.</p> <p><input checked="" type="checkbox"/> There are no changes to the previous Exposure Monitoring Plan.</p> <p>Comments:</p>
<p>Additional Comments:</p>

INDIVIDUAL HAZARD ASSESSMENT		DATE: 06 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Receipts		POC: LAWERANCE LANDERS PHONE: 639-8865 TOTAL PERSONNEL: 7 MALE: 7 FEMALE: 0		
SHOP OPERATIONS: The employees in this work area (BLDG 1231) receive equipment and inspect it to determine its disposition. These employees use electric forklifts to unload crates from trucks and deliver to storage areas.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Indoor battery charging station for electric forklifts. Hydrogen gas	< 1 hour per day	7	New sealed lead acid batteries. Batteries are recharged overnight when workers are not present.	Acceptable, due to low exposure, low toxicity, engineering and administrative controls.
<p>USE THE FOLLOWING EXPOSURE CODES:</p> <p>ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT.</p> <p>UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD</p> <p>REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD</p> <p>CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN</p>				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 13 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Retail Support Branch, Formerly "SASSY" (Support Activities Supply Systems)		POC: BRIAN KELLY PHONE: 639-7155 TOTAL PERSONNEL: 24 MALE: 19 FEMALE: 5		
SHOP OPERATIONS: The employees in this work area (BLDG 1260) receive equipment and inspect it to determine its disposition. They use electric fork-lifts to unload crates from trucks and deliver to storage areas.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Nuisance Dust (very fine sand) on equipment becomes air-borne. Possible exposure occurs when unloading and inspecting equipment received from overseas.	All day every day	13	Ventilation	Acceptable, low frequency of hazard and good ventilation.
Reading spreadsheets and other documents in warehouse desk area. May not have sufficient lighting for reading.	3 hours per day	5	Warehouse lighting	Uncertain, Lighting measurements have been added to WMP.
USE THE FOLLOWING EXPOSURE CODES: ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL. UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT. UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL. SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 12 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Set Assembly		POC: WILLIE HARRIS PHONE: 639-7091 TOTAL PERSONNEL: 23 MALE: 14 FEMALE: 9		
Shop operations: Workers in the Set Assembly shop (BLDG 1241) store collateral gear for rolling stock vehicles. Prior to vehicle shipment they gather and package sets of required equipment for each vehicle. Workers drive fork lifts and pack and label crates for shipments. This area contains a satellite storage area for HAZMAT chemicals (mostly cans of spray paint used to stencil crates).				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Indoor battery charging station for electric forklifts. Hydrogen gas	< 1 hour per day	23	New sealed lead acid batteries. Batteries are recharged overnight when workers are not present.	Acceptable, due to low exposure, low toxicity, engineering and administrative controls.
USE THE FOLLOWING EXPOSURE CODES:				
ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.				
UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT.				
UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.				
SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD				
REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD				
CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 12 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Weapons, BLDG 1340		POC: BARRY CASON PHONE: 639-5533 TOTAL PERSONNEL: 11 MALE: 8 FEMALE: 3		
SHOP OPERATIONS: The workers in this area store, warehouse, and issue weapons, crypto gear, classified pubs and Tritium lined gun sights. These workers use small hand tools to perform minor adjustments and repairs to small arms. They store Tritium lined gun sights in a separate hut inside of building 1340 which is monitored by the MCLB risk management office's health physicist.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Storage of gun sights that contain an inner lining which contains Tritium.	The Rad Hut is entered by the Environmental Protection Assistant for several short entries that add up to about 5 hours per week.	1	Tritium lined gun sights are kept below acceptable limits and stored in a separate hut inside of building 1340 which is monitored by the MCLB Risk Management Office's Health Physicist.	Acceptable: Tritium is kept below 10,000cu. The Rad Hut is ventilated and only entered by the Environmental Protection Assistant and RMO Health Physicist. TLD's have been worn by employees in the past, but consistently yielded negative results and have been deemed no longer necessary.
Stenciling, spray paint: Organic vapors	3-5 times per day, for 10 seconds each	11	Open warehouse ventilation.	Acceptable due to low frequency and short duration
Parts cleaning Safety clean solvent	2 or 3 times per month for 5 minutes	5	PPE: gloves and aprons	Acceptable due to low frequency and duration.

INDIVIDUAL HAZARD ASSESSMENT		DATE: 12 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Weapons, BLDG 1340		POC: BARRY CASON PHONE: 639-5533 TOTAL PERSONNEL: 11 MALE: 8 FEMALE: 3		
SHOP OPERATIONS: The workers in this area store, warehouse, and issue weapons, crypto gear, classified pubs and Tritium lined gun sights. These workers use small hand tools to perform minor adjustments and repairs to small arms. They store Tritium lined gun sights in a separate hut inside of building 1340 which is monitored by the MCLB risk management office's health physicist.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
<p>USE THE FOLLOWING EXPOSURE CODES:</p> <p>ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT.</p> <p>UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD</p> <p>REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD</p> <p>CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN</p>				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 13 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Preservation Section (BLDG 1362)		POC: Ssgt. Lowder PHONE: 639-8361 TOTAL PERSONNEL: 12 MALE: 12 FEMALE: 0		
SHOP OPERATIONS: Maintain and store rolling stock. Employees in this shop prepare vehicles for long term storage; perform light maintenance, and touch-up spray painting.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT (1)
Spray Painting	5 minutes per job, 2 or 3 jobs per week. < 1 hour per month	12	Ventilation; spray painting is done outdoors PPE, Respirators are worn when painting.	Acceptable due to ventilation, and limited exposure.
Toluene (in some paint) The ECOSURE White paint provided by LHB industries used for stenciling contains Toluene.	< 1 hour per week	12	Ventilation; spray painting is done outdoors or using local ventilation while spraying indoors.	Acceptable due to ventilation, and limited exposure. Toluene is a reproductive hazard.
Noise hazard exists when using power tools and running vehicle engines. Noise levels of 84-88 dBA have been measured (Aug 2007).	Duration varies widely from day to day, is mission dependant.	12	These employees are enrolled in the Hearing Protection Program, and wear PPE when using power tools.	Uncertain; Dosimetry measurements will be needed to measure TWA. Noise is a reproductive hazard.
Running truck engines: exhaust fumes; CO	Several times each day for as short duration as possible, no more than 1 minute each time	12	Eng. Control: Engine exhausts ventilation in outdoors. Tail pipes are at garage door openings when engines are running.	Acceptable due to Engineering controls.

INDIVIDUAL HAZARD ASSESSMENT		DATE: 13 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Preservation Section (BLDG 1362)		POC: Ssgt. Lowder PHONE: 639-8361 TOTAL PERSONNEL: 12 MALE: 12 FEMALE: 0		
SHOP OPERATIONS: Maintain and store rolling stock. Employees in this shop prepare vehicles for long term storage; perform light maintenance, and touch-up spray painting.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT (1)
Oils and engine/transmission fluids. Contact hazards.	As required, once or twice per day.	12	Eng.Control: Hose and reel systems pumps fluids directly into vehicle without employee contact.	Acceptable due to engineering control.
1. USE THE FOLLOWING EXPOSURE CODES: ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL. UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT. UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL. SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 14 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Bulk Fuel		POC: ARCH SHEALY PHONE: 639-5919 TOTAL PERSONNEL: 7 MALE: 6 FEMALE: 1		
SHOP OPERATIONS: Employees in this area receive, store, inspect, and issue empty fuel and water tanks. They operate electric forklifts in warehouses. They handle all equipment and parts required to build a bulk fuel station. They do not handle any actual fuel, just fuelling equipment such as tanks, pumps, hoses, valves...ect.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Stenciling: Spray Painting	5 minutes per job, 2 or 3 jobs per week. < 1 hour per month	7	Ventilation; spray painting is done outdoors PPE, Respirators are worn when painting.	Acceptable due to ventilation, and limited exposure.
<p>USE THE FOLLOWING EXPOSURE CODES:</p> <p>ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT.</p> <p>UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD</p> <p>REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD</p> <p>CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN</p>				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 8 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: M2 Branch, BLDG 1426		POC: MIKE LAYFIELD PHONE: 639-8001 TOTAL PERSONNEL: 50 MALE: 47 FEMALE: 3		
SHOP OPERATIONS: Maintain and store rolling stock. Employees in this shop prepare vehicles for long term storage; perform light maintenance, and touch-up spray painting.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Paint mist while spray painting	2-3 minutes per job, 2 or 3 jobs per week. < 1 hour per month	46	Installed ventilation system for localized ventilation.	Acceptable due to ventilation and limited duration and frequency of procedure. Only Touch-up painting is performed.
Toluene (in some paint) The ECOSURE White paint provided by LHB industries used for stenciling contains Toluene.	< 1 hour per week	46	Ventilation; spray painting is done outdoors or using local ventilation while spraying indoors.	Acceptable due to ventilation, and limited exposure. Toluene is a reproductive hazard.
Noise hazard exists when using power tools and running vehicle engines. Noise levels of 84-88 dBA have been measured.	Variable; due to irregular work patterns.	46	Wear PPE when using power tools.	No overexposure, TWA is judged to be below Navy std of 84 dBA. Noise is a reproductive hazard.
Lubricating parts: contact with lubricants	Daily, variable	46	PPE: Safety glasses, nitrile gloves	ACCEPTABLE; due to low inhalation toxicity and volatility of the fluids. Should minimize skin contact with lubricants.

INDIVIDUAL HAZARD ASSESSMENT		DATE: 8 December 2012		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: M2 Branch, BLDG 1426		POC: MIKE LAYFIELD PHONE: 639-8001 TOTAL PERSONNEL: 50 MALE: 47 FEMALE: 3		
SHOP OPERATIONS: Maintain and store rolling stock. Employees in this shop prepare vehicles for long term storage; perform light maintenance, and touch-up spray painting.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Preservation of vehicles; P19 Preservative. Main ingredients: Aliphatic Petroleum Solvent CAS# 64742-88-7, 64742-47-8, 8052-41-3 and Oxidized Aliphatic Petroleum Fraction CAS# 64743-01-7 Phosecote Liquid is 25% phosphoric acid solution.	4 hrs, 3X per wk 4 hrs, 3X per wk	15	This process is performed outdoors in natural ventilation. Personnel are rotated in and out of this position daily. PPE: Tyvex suits and respirator with OV cartridge. Same as above except replace OV cartridge with N95.	Acceptable due to high level of ventilation and personnel rotation.
USE THE FOLLOWING EXPOSURE CODES: ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL. UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT. UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL. SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN				

INDIVIDUAL HAZARD ASSESSMENT		DATE: 12 December 20112		
RECORDED BY: JOHN SORENSON SIGNATURE: COMMAND: LOGCOM, FLEET SUPPORT SHOP NAME: Pubs, WHSE 1220		POC: WILLIE HARRIS PHONE: 639-6258 TOTAL PERSONNEL: 4 MALE: 2 FEMALE: 2		
SHOP OPERATIONS: This warehouse stores, packages and ships documents and publications. The workers in this area operate electric fork lifts.				
HEALTH HAZARDOUS STRESSORS AND ASSOCIATED OPERATIONS	DURATION / FREQUENCY OF EXPOSURE	NO. OF WORKERS	CONTROLS	EXPOSURE ASSESSMENT
Stenciling: Spray Painting	5 minutes per job, 2 or 3 jobs per month. < 1 hour per month	4	Ventilation; spray painting is done outdoors PPE, Respirators are worn when painting.	Acceptable due to ventilation, and limited exposure.
Indoor battery charging station for electric fork lifts.	Short/Low	4	Eng. Control: Sealed lead acid batteries. Administrative Control; Batteries are recharged overnight when workers are not present.	Acceptable, due to administrative controls.
<p>USE THE FOLLOWING EXPOSURE CODES:</p> <p>ACCEPTABLE - ONE WHERE THE IH WILL NOT EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>UNCERTAIN - ADDITIONAL DATA NEED TO BE COLLECTED TO CLARIFY THE EXPOSURE ASSESSMENT. THE IH SHOULD MAKE AN INTERIM EXPOSURE ASSESSMENT BASED ON OBSERVATION OF THE PROCESS AND/OR PROFESSIONAL JUDGMENT.</p> <p>UNACCEPTABLE - ONE WHERE THE IH WILL EXPECT THE SEG TO BE EXPOSED ABOVE THE SELECTED OEL.</p> <p>SKIN - THE MATERIAL POSES A SKIN ABSORPTION HAZARD</p> <p>REPRODUCTIVE HAZARD - THE MATERIAL IS A NAVY-RECOGNIZED REPRODUCTIVE HAZARD</p> <p>CARCINOGEN - THE MATERIAL CONTAINS > 0.1% OF AN OSHA, ACGIH, IARC, OR NTP-RECOGNIZED CARCINOGEN</p>				

Exposure Monitoring Plan 2012-2013
Fleet Support Division
AL12002

Date Issued: 17 DEC 2012

IH: John Sorenson

COST WORK CENTER	POINT OF CONTACT (SHOP SUPERVISOR)	STRESSOR	SAMPLING INSTRUCTIONS	NUMBER OF SAMPLES NEEDED	MAN-HOURS	PRIORITY (SEE NOTE 1)	COMMENTS
M2 Shop, BLDG 1426	Mike Layfield 639-8001	Paint and P-19 preservatives (petroleum solvents)	Two sets of full shift sequential personal air samples on two employees performing P-19 preservation.	4 total (2 each on 2 employees)	32	2	Process evaluation
M2 Shop, BLDG 1426	Mike Layfield 639-8001	Noise	Full shift personal noise dosimetry on two nonconsecutive days on each of two employees on typical workdays.	4 total (2 each on 2 employees)	32	3	To validate HCP enrollment.
Preservation	Ssgt. Lowder	Noise	Full shift personal noise dosimetry on two nonconsecutive days on each of two employees on typical workdays.	4 total (2 each on 2 employees)	32	3	Process evaluation
SASSY	Willie Harris	Lighting	Verify if lighting in desk area of warehouse is up to recommendations for reading fine print.	1	1	3	Process evaluation
TOTAL MAN-HOURS					97		
NOTE 1: DEFINITION OF MONITORING PRIORITIES:							
Priority 1: Mandated by instruction/law							
Priority 2: Needed for forming hazard assessment or establishing PPE need (everything not fitting 1 or 3)							
Priority 3: Nice to have/freshen old data/have data but want to strengthen the statistics/miscellaneous or screening sampling							

SUMMARY OF HAZARD-BASED MEDICAL SURVEILLANCE STATUS
Fleet Support Division, 2012-2013

The following table summarizes current *hazard-based* medical surveillance status. For some shops there are few if any data available, and so new sampling is being conducted to validate whether specified medical surveillance enrollment is appropriate. However, no shops will be added to or removed from any medical surveillance program without adequate industrial hygiene sampling data, an assessment of the data, and review of industrial hygiene recommendations by Occupational Medicine personnel. Work areas not listed in this table have no hazard-based medical surveillance recommendations.

PRODUCTION SHOP	HEARING CONS		
M2, Preservative Section (old OMS)	X		

Explanation of Medical Surveillance Recommendations.

1. Recommendation for inclusion in a hazard-based medical surveillance program for employees involved in a given operation is based on the industrial hygienist's judgment, either through observation or knowledge of the process or representative sampling, that these employees will be routinely exposed to workplace concentrations at or above 50% of applicable OSHA standards or action levels established by Navy instruction or Federal regulation.
2. Medical certifications are not included in this table. Certifications are required by specific Navy or Federal directive where a certain degree of physical fitness has been judged as necessary for a component of the job (i.e. respirator use) or the job itself (i.e. forklift operators or security guards), and as such are specified by the command, not by Industrial Hygiene. Governing references regarding certifications should be followed.
3. Ionizing Radiation examinations are not specified by Industrial Hygiene, but rather by the Radiation Safety Officer, and so are not included on this table.
4. The requirement for a medical surveillance program for "sight conservation" is no longer Navy policy (see OPNAVINST 5100.23G, chapter 19), so such specifications are not included in this table. Position-specific requirements for visual acuity remain, but specification of such is outside the scope of Industrial Hygiene.
5. The medical surveillance listed above represents no change from previous medical surveillance recommendations.

GLOSSARY OF TERMS

AABA: **A**mbient **A**ir **B**reathing **A**pparatus. Unlike compressors used for breathing air for atmosphere supplying respirators which must be tested quarterly to ensure that at least Grade D quality air is supplied to respirator wearers; AABAs are exempt from quarterly Grade D air quality testing.

NOTE: AABA air intakes must be located in fresh clean ambient air.

Acceptable (in the context of exposure assessment): Exposure estimate of similar exposure group is less than half (50%) of the occupational exposure limit (OEL). *See also Action Level.*

ACGIH®: **A**merican **C**onference of **G**overnmental **I**ndustrial **H**ygienist is an independent standard setting group who develops Threshold Limit Values®, the workplace exposure limit recommended by the American Conference of Governmental Industrial Hygienists. Examples of this include annual editions of the *TLVs® and BEIs®* and work practice guides. *See also TLV® (Threshold Limit Value); TWA (Time-Weighted Average); STEL (Short-Term Exposure Limit); and Ceiling Limit*

Action Level: Unless otherwise specified in a NAVOSH standard, one-half the relevant PEL, TLV®, etc. *See also Occupational Exposure Limit (OEL).*

Administrative Control: Procedures and practices that limit exposure to harmful physical or chemical agents by control or manipulation of work schedule or the manner in which work is performed. Administrative controls reduce the exposure to stressors and thus reduce the cumulative dose to any one worker. If unable to alter the job or workplace to reduce the stressors, administrative controls should be used. Administrative controls are most effective when used in combination with engineering controls.

AUL: **A**uthorized **U**ser **L**ist: A listing of chemicals whose use is authorized by for a department, shop or other entity.

BBP: **B**lood-**B**orne **P**athogen: Pathogenic microorganisms transmissible by exposure to blood and other potentially infectious materials, and include Hepatitis B Virus (HBV), Hepatitis C, and Human Immune Deficiency Virus (HIV), as well as syphilis and malaria.

Carcinogen: The material contains greater than or equal to 0.1% OF AN Occupational Safety and Health Administration (OSHA), American Conference of Governmental Industrial Hygienist (ACGIH), International Agency for Research on Cancer (IARC), or National Toxicology Program (NTP)-recognized carcinogen.

Ceiling Limit- TLV®: (**TLV-C**): Is a concentration that should not be exceeded during any part of the workday (as recommended by the ACGIH). *See also OEL*

Concentration: The quantity of a substance per unit volume (in appropriate units). The following are examples of concentration units. *See unit examples below*

Mg/m ³	Milligrams per cubic meter	Unit of airborne concentration for gases, vapors, fumes, and/or dusts
µg/m ³	Micrograms per cubic meter	Unit of airborne concentration for gases, vapors, fumes, and/or dusts
PPM	Parts per million (air)	Unit of airborne concentration for vapors or gases
Fibers/cc or f/cc	Fibers per cubic centimeter	A unit of measure for fibrous airborne particulates such as asbestos fibers.
Mppcf	Millions of particles per cubic foot	A unit used for airborne dusts based on particle counts & which has virtually been eliminated from routine use.

CHRIMP: The Consolidated Hazardous Material Reutilization and Inventory Management Program serves as a fundamental element of the Navy's life-cycle control and management of Hazardous Materials.

Contaminant: A material or agent in concentrations higher than those normally present in the atmosphere, e.g., dust, fume, gas, mist or vapor, which can be harmful, irritating, or a nuisance.

Decibel-dB: A unit used to express sound pressure levels; specifically, 20 times the logarithm of the ratio of the measured sound pressure to a reference quantity, 20 micro-pascals (0.0002 microbars).

dBA or dBA_s: A sound level reading in decibels as measured on the A-weighted network of a sound level meter. (See A-weighted Sound Level) Sometimes referred to as dBA_s, meaning A-weighted Sound level, where the sound level meter is set to "slow response." A –weighted sound pressure is designated to approximate the response of the human ear to sound.

DV: Dilution Ventilation – An engineering control strategy which relies upon the dilution of potential contaminants with fresh (outside) air thus reduces the concentration of potential contaminants to acceptable levels.

EPA: United States Environmental Protection Agency is a federal agency charged with the promulgation and enforcement of environmental regulations. Their mission includes Air, Water and Waste regulation to protect the public and the environment.

Ergonomic Hazards: Workplace conditions that pose a biomechanical stress to a worker's body as a consequence of posture and force requirements, work/rest regimens, repetition rate, or other similar factors. Faulty work station layout, improper work methods, or tools may contribute to such conditions.

Ergonomics: The study of the design of work in relation to the physiological and psychological capabilities of people. The aim of the discipline is the evaluation and design of facilities, environments, jobs, training methods, and equipment to match the capabilities of users and workers, and thereby to reduce fatigue, error, or unsafe acts.

AND / OR

Ergonomics is the field of study that involves the application of knowledge about physiological, psychological and biomechanical capacities and limitations of the human body. This knowledge is applied in the planning, design, and evaluation of work environments, jobs, tools and equipment to enhance worker performance, safety and health and reducing the potential for fatigue, error, or unsafe acts.

Ergonomics is essentially fitting the workplace to the worker. The application of knowledge about physiological, psychological and biomechanical capacities and limitations of the human body to work environments, jobs, tools and equipment to enhance worker performance, safety and health and to reduce the potential for fatigue, error, or unsafe acts.

Fibers per cubic centimeter (fibers/cc): Unit of measure used to describe the concentration of asbestos or manmade fibers in air. This unit is often used to describe airborne or occupational inhalation exposure potential and in describing recommended control limits.

Hazardous Chemical: Any chemical that is a physical hazard or a health hazard per 29 CFR Section 1910.1200(c), and with some exceptions as specified in the Community Right to Know Law of 1986 (Superfund Amendments and Reauthorization Act [SARA], Title III). *See "Hazardous Material."*

Hazardous Material (HM): For the purposes of the Material Safety Data Sheet (MSDS), a hazardous material is defined as a material having one or more of the following characteristics:

- (a) Has a flashpoint below 200°F (93.3°C) closed cup, or is subject to spontaneous heating or is subject to polymerization with release of large amounts of energy when handled, stored, and shipped without adequate control.
- (b) Has a threshold limit value (TLV) below 1000 ppm for gases and vapors, below 500 mg/m³ for fumes, and below 30 mppcf for dusts.
- (c) A single oral dose which will cause 50 percent fatalities to test animals when administered in doses of less than 500 mg per kilogram of test animal weight.
- (d) Is a strong oxidizing or reducing agent.
- (e) Causes first degree burns to skin in short time exposure or is systematically toxic by skin contact.
- (f) In the course of normal operations, may produce dusts, gases, fumes, vapors, mists, or smokes with one or more of the above characteristics.

- (g) Produces sensitizing or irritating effects.
- (h) Is radioactive.
- (i) The item has special characteristics, which in the opinion of the manufacturer could cause harm to personnel if used or stored improperly.

Hazardous Substance: Any substance that, because of its quantity, concentration, or hazardous properties, may pose a substantial hazard to human health or the environment when purposely released or accidentally spilled.

HCP: **H**earing **C**onservation **P**rogram – Such programs typically include: monitoring, audiometric testing, hearing protectors, training, and recordkeeping requirements.

IHFOM: The Navy **I**ndustrial **H**ygiene **F**ield **O**perations **M**anual
<http://www-nehc.med.navy.mil/ih/ihfom.htm>

L_{avg}: Best described as the Average Sound Level over the period of the measurement. Usually measured A-weighted but there is no time constant applied. As it is an average, it will settle to a steady value, making it much easier to read accurately than with a simple instantaneous Sound Level. Being an average, it is also showing the total energy of the noise being measured, so it is a better indicator of potential hearing damage or the likelihood that the noise will generate complaints.

LEV: **L**ocal **E**xhaust **V**entilation – an engineering control form which relies on exhaust systems equipped with specially designed ‘hoods’ which capture dusts, fumes, mists, gases or vapors to prevent or reduce the inhalation contaminants.

Mandatory

1. authoritatively ordered; obligatory; compulsory: *It is mandatory that all personnel show ID badges when entering the gate.*
2. permitting no option; not to be disregarded or modified: *e.g. a mandatory requirement*

MCE Filter: **M**ixed **C**ellulose **E**ster membrane filters – a type of sampling media used to collect specific particulates as a part of Industrial Hygiene evaluation.

Micrograms per cubic meter ($\mu\text{g}/\text{cu.m.}$ or $\mu\text{g}/\text{m}^3$): A unit of measure for exposures to materials based on mass per unit volume. A microgram represents one millionth of a gram of material. *See also Milligrams per cubic meter and parts per million*

Milligrams per cubic meter ($\text{mg}/\text{cu.m.}$ or mg/m^3): A unit of measure for exposures to materials based on mass per unit volume. A milligram represents one thousandth of a gram of material. *See also Micrograms per cubic meter and parts per million.*

Monitoring, Industrial Hygiene: Measurement of the amount of contaminant or physical stress reaching the worker in the environment.

Monitoring, Medical Surveillance: The preplacement and periodic evaluation of the health status of workers exposed to toxic substances or physical agents in the workplace. Measures the effects of contaminant on a workers body functions and tissues, e.g., decreased lung function, dermatitis, and abnormal blood count.

MSAL: Medical Surveillance Action Level; The recommended threshold at which ongoing medical surveillance should be initiated as an additional assurance that clinical health effects are not occurring. Medical surveillance may be specified by standard or voluntarily adhered to by convention. *See also Action Level*

Navy Occupational Safety and Health (NAVOSH) Standards: Occupational safety and health standards published by the Navy which include, are in addition to, or are alternatives for the OSHA standards which prescribe conditions and methods necessary to provide a safe and healthful working environment.

NEHC: Navy Environmental Health Center

NIOSH: The National Institute for Occupational Safety and Health is the federal agency that tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes occupational exposure standards to OSHA.

NOAA: The National Oceanic and Atmospheric Administration is a federal agency focused on the condition of the oceans and the atmosphere.

NOEL: Navy Occupational Exposure Limit

Noise: Noise is defined as unwanted sound.

Noise Exposure: Personal exposure to a combination of sound levels at various intensities and durations.

Occupation Exposure Limit (OEL): The exposure limit used by a health professional to help determine a workers' or populations' health risk from exposure to a hazard. "OEL" is a generic term used to apply to all exposure limits, to include: DoD standards from DoD 6055.1, Occupational Safety and Health Administration (OSHA), Permissible Exposure Limits (PELs), DoD Component standards, military deployment environmental health limits, American Conference of Governmental Industrial Hygienists (ACGIH[®]), Threshold Limit Values[®] (TLVs[®]), National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs), and other exposure limits reviewed for potential use.

Occupational Health: That multidisciplinary field of preventive medicine that is concerned with the promotion and maintenance of the highest degree of physical, mental and social well being of workers in all occupations, and the prevention and/or treatment of illness or injury induced by factors in the workplace. The major disciplines involved are: occupational medicine, occupational health nursing, epidemiology, toxicology, audiology, industrial hygiene, ergonomics, and health physics. Activities include the design, implementation and evaluation of 30 Dec 05 G-19 comprehensive health and safety programs that promote employee health and safety in the workplace.

OEL: *See Occupational Exposure Limit*

OSHA: (a) Occupational Safety and Health Act, or
(b) Occupational Safety and Health Administration, Department of Labor (DOL), the federal agency which adopts and enforces health and safety standards.

Peak Noise Level: The true peak value is the maximum value of the noise waveform. The impulse measurement is an integrated measurement. The true peak reading should only be used when determining compliance with OSHA's 140 dB peak sound pressure level [1910.95(b)(1) or 1926.52(e)].

Note: The user should *not* use "impulse" response when measuring true peak sound pressure levels.

PEL: Permissible Exposure Limit – The maximum permissible concentration of a toxic chemical or exposure level of a harmful physical agent (normally averaged over an 8-hour period) that an employee may be exposed. This term is applied to OSHA regulated limits.

Potentially Hazardous Noise: Exposure to greater than the Navy Occupational Exposure Limit of 84 dBA sound level or 140 dB peak sound pressure level for impulse noise. The safe exposure time (T) for periods of less than 16 hours in any 24-hour period may be determined by using the equation:

$$T = 16/2^{[(L-80)/4]} \quad \text{Where } T = \text{time in hours}$$

L = effective sound level in dBA

Potentially Hazardous Noise Area: Any work area where the A-weighted sound level (continuous or intermittent) is greater than 84 dBA or any work area where the peak sound pressure level exceeds 140 dB.

PPE: Personal Protective Equipment – See *Protective Clothing and Protective Equipment*.

ppb: Parts Per Billion - A measure of concentration used much like percent. One part per billion represents 0.000001% and conversely, one percent is equivalent to 10,000,000 ppb.

ppm: Parts Per Million – A measure of concentration used much like percent. One part per million represents 0.001% and conversely, one percent is equivalent to 10,000 ppm.

Protective Clothing: An article of clothing furnished to an employee at government's (as the employer's) expense and worn for personal safety and protection in the performance of work assignments in potentially hazardous conditions.

Protective Equipment: A device or item to be worn, used, or put in place for the safety or protection of an individual or the public at large, when performing work assignments in or entering hazardous areas or under hazardous conditions. Equipment includes hearing protection, respirators, electrical matting, barricades, traffic cones, lights, safety lines, life jackets, etc.

Prudent Practice: Generally accepted reasonable and prudent practice. "A prudent or good practice" involves not only accepted customary practices, but also prudent behavior in terms of the risks of violation of law or regulation, that is, the risk of adverse publicity for the institution and the risk of injury and/or damages.

PVC Filter: Poly Vinyl Chloride filters – a type of sampling media used to collect specific particulates as a part of Industrial Hygiene evaluation.

Reproductive Hazard: Any occupational stressor (biohazard, chemical, or physical) that has the potential to adversely affect the human reproductive and/or developmental process.

RPP: Respiratory Protection Program

SCBA: A type of Positive pressure respirator, Self-Contained Breathing Apparatus – a form of respiratory protection which relies on bottled breathing air (worn by the user) as the source of air to be breathed by the wearer. Most typically, these devices are equipped with a full face mask which also serves to protect the wearer’s face and eyes from incident splash and or gas/vapor contact.

SLM: Sound Level Meter – a device for measuring sound or noise levels

SPL: Sound Pressure Level – a term used in discussion of sound or noise measurements.

STEL: Short-Term Exposure Limit – Type of Threshold Limit Value, (workplace exposure limit) recommended by the American Conference of Governmental Industrial Hygienists® (ACGIH®). A concentration to which workers can be exposed for a short periods of time (15 min.) without adverse affect. The STEL supplements the TLV® and is recommended where toxic effects have been reported for short-term exposures. *See also Threshold Limit Value (TLV®).*

TLV®: Threshold Limit Values® are established by the American Conference of Governmental Industrial Hygienists® (ACGIH®). TLVs refer to airborne concentrations of a substance and represent conditions under which it is believed that nearly all workers may be exposed day after day without adverse effect. *See also TWA, STEL and Ceiling Limits.*

TLV-C: *See Ceiling Limit - TLV*

TWA: Time-Weighted Average - Occupational exposure limit guideline - An average value weighted in terms of the actual time that it exists during a given time interval. That is, across a sampling period, an 8-hour work day, etc. *See also OEL, PEL, REL, and TLV®.*

Unacceptable (in the context of exposure assessment): Exposure estimate of similar exposure group is greater than (100%) of the occupational exposure limit (OEL). *See OEL.*

Uncertain (in the context of exposure assessment): Additional data is needed to clarify the exposure. Measurements, further fact-finding or sample collection may be necessary in order to resolve an exposure assessment.

UV: Ultra Violet light: Ultraviolet rays have wavelengths shorter than visible rays. So short that they are not part of the visible light spectrum.

WBGT: The wet-bulb globe temperature is considered the most practical heat stress index, characterizing the effect of a heat stress environment on the individual. WBGT was developed because the dry-bulb temperature alone does not provide a realistic guide to the effects of heat, inasmuch as it does not take humidity and heat radiation into consideration. The WBGT is used in setting the weather “Flag” (white, green, yellow, red, or black) conditions used to communicate the relative risk of heat stress during outdoor work or exercise.