DEPARTMENT OF THE NAVY
NAVAL MEDICAL ADMINISTRATIVE UNIT
PRESIDIO OF MONTEREY ARMY HEALTH CLINIC
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6260
04M/032
23 Apr 10

From: Officer in Charge, Naval Medical Administrative Unit, Monterey
To: Chairman, Meteorology Department, Naval Postgraduate School, Monterey, 589 Dyer Road, Monterey CA 93943

Subj: TWO-YEAR INDUSTRIAL HYGIENE SURVEY, METEOROLOGY DEPARTMENT, NAVAL POSTGRADUATE SCHOOL, MONTEREY, REPORT 66271-09-8

Ref: (a) OPNAVINST 5100.23G, Chapter 8

Encl: (1) Industrial Hygiene Survey Report

1. Per reference (a), a two-year industrial hygiene survey of the Meteorology Department, Naval Postgraduate School, Monterey was conducted by my Industrial Hygienist on 26 February 2010.

2. The cooperation and hospitality shown by Mr. Dick Lind contributed to a timely assessment of your safety and health programs. This assistance is highly appreciated.

3. **There were no Findings during the current survey. As such, a response to this report is unnecessary, and it is forwarded for information only. Dick Lind is to be congratulated in resolving the Hazardous Materials Control Program issues identified during the previous survey.**

4. If there are any changes in operations, please complete Appendix I and forward it to S. Eric Thurston, Industrial Hygienist. If further consultation on this report is needed, please contact Mr. Thurston at sethurs@nps.edu.

K. L. BRICKO

Copy to:
Dean, NPS GSEAS
NPS SOH Mgr
NHL IH Dept

Two-Year Industrial Hygiene Survey
Of
Meteorology Department
Naval Postgraduate School, Monterey
26 February 2010

Survey Conducted by:	S. Eric Thurston, Industrial Hygienist
Survey Reviewed by:	Michael J. Puckett, MPH, REHS Supervisory Industrial Hygienist
Survey Report Approved by:	LT K.L. Bricko, LT, MSC Officer In Charge, Naval Medical Administrative Unit, Monterey

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EXECUTIVE SUMMARY

An annual industrial hygiene survey of the Naval Postgraduate School, Monterey, Meteorology Department was recently conducted to assess the occupational health portion of the department's Naval Occupational Safety and Health (NAVOSH) program.

a. There were no deficiencies noted during this survey. The hazardous materials control program has improved greatly since the previous survey.

b. Training needs to be provided for reproductive hazards, hazardous material, and lead hazard awareness through the training modules in the Enterprise Safety Application Management System (ESAMS). Refer to Appendix G of this report for guidance on this training.

Overall, the occupational health portion of your NAVOSH Program is **Excellent**.

DISCUSSION, FINDINGS, AND RECOMMENDATIONS

References: (a) OPNAVINST 5100.23G, Chapter 8

1. As required by reference (a), a two-year industrial hygiene survey was conducted on 26 February 2010 of the Meteorology Department, Naval Postgraduate School, Monterey. The primary purpose of this survey was to identify any new occupational hazards, review the occupational health portion of the department's NAVOSH program and update the Exposure Monitoring Plan (EMP).

A. ENGINEERING CONTROLS: Use of temperature-controlled soldering irons to minimize generation of lead fumes during soldering with lead-tin solder.

B. RESPIRATORY PROTECTION PROGRAM (RPP): Not applicable.

C. HAZARDOUS MATERIAL CONTROL AND MANAGEMENT PROGRAM (HMCM):

Findings in this program identified during the 2008 survey have been resolved. A departmental hazardous materials inventory list has been developed, and a spot check indicates that MSDS's have been obtained for all chemical products stored/used. MSDS's are neatly arranged in order in back of the inventory list, which appears at the front of the MSDS binder. Particularly impressive is that containers of the same chemical product are arranged in rows in the flammable storage locker so that the contents of the front container can be completely used before a second container is opened. This practice is anticipated to minimize the number of chemical product containers that need to be stored in the locker.

D. BLOODBORNE PATHOGENS PROGRAM (BBP): Not applicable.

E. HEARING CONSERVATION PROGRAM (HCP): The only source of hazardous noise in past surveys was from use of the the MAE Department's bench band saw in Bldg 230. As mentioned earlier, this building has been demolished since the previous survey, and therefore hazardous noise exposure does not occur.

F. PERSONAL PROTECTIVE EQUIPMENT (PPE):

The following PPE is required for adequate protection against potential health hazards associated with departmental operations. All PPE were found to be clean, serviceable, and properly stored.

PPE	PROCESS/PURPOSE
Safety glasses	Lead-tin soldering and during rare use of minimal amounts of chemical products

G. IONIZING AND NON-IONIZING RADIATION CONTROL PROGRAM:

Not applicable. The aerosol spectrometers with enclosed class II lasers are no longer used.

I. ERGONOMICS:

The only ergonomic hazard presented during past surveys involved the handling of buoys and their associated 30 and 50 pound buoy weights. As discussed earlier, this Building has been demolished and all Buoy Lab equipment has been stored in Conex boxes. Therefore, no current ergonomics hazards exists.

J. OCCUPATIONAL REPRODUCTIVE HAZARDS PROGRAM (ORHP):

Per reference (a), Chapter 29 reproductive hazards include:

- *lead during soldering, and
- *ethanol during chemical cleaning
- *toluene during rare use of Star Brite Liquid Electrical Tape

3M Scotchkote Electrical Coating, which contain toluene, is no longer stored or used as in the past.

Lead presents a hazard to males, females, and developing fetuses, while ethanol and toluene are hazardous to developing fetuses only. As discussed in the exposure assessment section of this report, significant exposures are not expected. Since only males handle chemical products, ethanol and toluene do not present reproductive hazards in this department.

K. OCCUPATIONAL HEALTH-RELATED MEDICAL SURVEILLANCE PROGRAM (MSP): As indicated in Appendix F of this report, medical surveillance based on industrial hygiene assessment is

unnecessary. However, additonal surveillance may be identified by the NPS Safety & Occupational Health Office.

L. OCCUPATIONAL HEALTH-RELATED TRAINING MATRIX: See Appendix G for the Training Matrix based on occupational health-related assessments conducted by the Industrial Hygienist. Additional training for safety-related hazards or requirements may be identified separately by the NPS Safety & Occupational Health Office.

APPENDIX A

IH EXPOSURE ASSESSMENT/MONITORING PLAN		
WORKPLACE INFORMATION		
Org: Naval Postgraduate School, Monterey	*Shop*: Meteorology Department	*Workcenter*: -------
Location: Bldg 232, Rooms 600,609	*Supervisor*: Dick Lind	*Phone*: 831-656-3110
Workers: 2	*Male*: 2	*Female*: 0

Operations:

Room 600 (the Balloon Room) contains equipment used for minor maintenance and setup of balloon-related equipment and systems; this room is also being used to develop software associated with experimental equipment, and to store equipment not currently in use.

Since the previous survey, this department no longer has any space in Room 602. Chemical products and processes previously located in this room were moved into Room 600.

Room 609 is an equipment storage room and also serves as a staging area for outgoing/incoming equipment for field experiments.

Occasional lead-tin soldering is performed. Radiosones are still filled with helium for launching during field experiments on the roof of Spanagel Hall. Less than 1 ounce of *ethanol and acetone are used each year for cleaning hardware. Chemtronics 2000 Cleaner/Degreaser is no longer used, but retained in storage for possible but unlikely future usage. Several chemical products are stored but not currently used. Since the previous survey, Building 230, which housed the department's Buoy Lab (where buoys were repared for stationing and recovered buoys were stored), was demolished. Buoy lab equipment and supplies have been stored in Conex boxes, and all operations are currently suspended.

*** = Reproductive Hazard**

WORK TASK	POTENTIAL HAZARD	WORKERS INVOLVD	FREQUENCY/ DURATION	MONITORING RECOMMENDED?
Lead-tinSolder	*Lead,tinFume	1	30 mins/ month	NO- EA Chem
Fill radiosnds	Helium	1	2880 ft3/year	NO– EA Chem
Chem Cleaning	*EthOh, acetn, solvents	1	<1 ounce/year	NO– EA Chem
Battery drills	*Noise	1	1 min/day	NO-EA Noise

IH EXPOSURE ASSESSMENT/MONITORING PLAN

WORKPLACE INFORMATION

Org: Naval Postgraduate School, Monterey	*Shop*: Meteorology Department	*Workcenter*: -------

IH EXPOSURE ASSESSMENT (EA)

NOISE: The measured noise levels of battery-powered drills used in other departments do not exceed the Navy noise criterion level of 84 dBA.

CHEMICALS:
*Lead and tin fume levels generated during lead-tin soldering are unlikely to exceed the AL and PEL (for lead) and MSAL and OEL (for tin) based on monitoring data of similar operations using temperature-controlled soldering irons and brief duration.

Helium concentrations are not expected to approach asphyxiation levels because the balloons are filled outdoor, where outdoor air would diluate any leakage.

Ethanol, acetone , and other chemicals, including solvents, present in other chemical products are unlikely to exceed the MSALs and OELs based on very minimal usage.

PERSONAL PROTECTIVE EQUIPMENT (PPE): Safety glasses.

ENGINEERING CONTROLS: Temperature-controlled soldering gun.

RESPIRATORY PROTECTION PROGRAM (RPP): Procedures performed here do not require the use of respirators, and they are not worn on an elective basis.

MONITORING PLAN

POTENTIAL HAZARD	NUMBER OF MEASUREMENTS	METHOD OF MEASUREMENT **1**	METHOD OF MEASUREMENT **2**	FREQUENCY (per year)	MAN-HOURS (per year)
None					

Use the following codes: not applicable.

Signature:Signed/ S. Eric Thurston, Industrial Hygienist	Date: 26 February 2010

APPENDIX B
AIR SAMPLING RESULTS

Industrial hygiene air sampling for the past 10 years was not required.

APPENDIX C
EQUIPMENT NOISE INVENTORY

Not applicable.

APPENDIX D
LOCAL EXHAUST VENTILATION
SYSTEM EVALUATION

No systems are not present in departmental spaces.

APPENDIX E
RESPIRATORY PROTECTION PROGRAM MATRIX

Respirators are not required and not worn during any procedures performed by departmental personnel.

APPENDIX F
OCCUPATIONAL HEALTH-RELATED
MEDICAL SURVEILLANCE PROGRAM MATRIX

Not required.

APPENDIX G
NPS Monterey, Meteorology Department
26 February 2010 Two-Year Survey Report
OCCUPATIONAL HEALTH-RELATED TRAINING MATRIX

PROCESS	ESAMS TRAINING MODULE
Lead-tin soldering	Lead Awareness (322), Occupational Reproductive Hazard Awareness (1242)
Hazardous Materials Use	*HAZCOM Intial Training (1169)

All training is required annually except as noted.

*Per Chapter 6, Appendix 6-B of OPNAVINST 5100.23 personnel also need to receive documented initial training covering their work center's MSDSs, with MSDS training repeated whenever new chemical products are introduced into the workplace.

APPENDIX H
GLOSSARY

TERM	MEANING
AL	Action Level - Normally half of PEL. Exposure level at which air sampling, employee training, and medical surveillance are required.
ACGIH	American Conference of Government Industrial Hygienist
AC/HR	Air Changes Per Hour
ANSI	American National Standards Institute
AQS	Air Quality Standard
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASTC	Aviation Survival Training Center
C	Ceiling - Toxic material exposure level which cannot be exceeded for any length of time.
CFM	Cubic Feet Per Minute
CFR	Code of Federal Regulation
EL	Excursion Limit - Concentration limit which cannot be exceeded at any time.
EAMP	Exposure Assessment/Monitoring Program. A program to evaluate workplace health hazards through surveys and exposure measurement.
EPA	Environmental Protection Agency
ERT	Emergency Reclamation Team
FC	Footcandles
F/CC	Fibers Per Cubic Centimeter. A means for expressing airborne asbestos fiber concentrations.
FeA	Field Area
FiA	Filter Area
FPM	Feet Per Minute
FT3	Cubic Feet
HDI	Hexamethylene Diisocyanate
HEPA	High Efficiency Particulate Air
HM	Hazardous Material
HMC&M	Hazardous Material Control and Management
HW	Hazardous Waste
IES	Illumination Engineering Society
IH	Industrial Hygiene
L	Liter
LPM	Liters Per Minute
LOD	Limit of Detection
LOQ	Limit of Quantitation

APPENDIX H (continued)

MG/M3	Milligram Per Cubic Meter of air. A means of expressing concentrations of dust and metal fumes in the air.
MSAL	Medical Surveillance Action Level. Concentration of air contaminant at which medical surveillance examinations must be provided to exposed personnel.
MSDS	Material Safety Data Sheet. A form used by manufacturers to communicate to users the chemical and physical properties of their products.
MSM	Medical Surveillance Matrix
NAVOSH	Navy Occupational Safety and Health
NEHC	Navy Environmental Health Center
NIOSH	National Institute of Occupational Safety and Health
OEL	Occupational Exposure Limit
OH/PM	Occupational Health/Preventive Medicine
OSHA	Occupational Safety and Health Administration
OV	Organic Vapor
PPE	Personal Protective Equipment
PPM	Parts Per Million. A means of expressing the concentration of gases and vapors in the air.
PSI	Pounds Per Square Inch
RF	Radio Frequency
SOP	Standard Operating Procedure
SQFT	Square Feet
STEL	Short Term Exposure Limit. A 15 minute time weighted average exposure which should not be exceeded at anytime during a workday.
STRESSOR	Potential hazard (e.g. Noise, Chemicals, Dusts, etc.)
TLV	Threshold Limit Value. Established by ACGIH as levels of airborne contaminants or physical hazards under which it is believed workers may be exposed on a daily basis without adverse effect.
TWA	Time Weighted Average. A method of averaging varying concentrations over a specified period of time, usually 8 hours.
UG	Microgram
VOL	Volume
>	Greater Than
<	Less Than

APPENDIX I

CHANGE OF OPERATION NOTIFICATION

Please use this form to notify the Industrial Hygienist of any changes to operations conducted by your department. The notification form needs to be completed and e-mailed to sethurst@nps.edu.

POINT OF CONTACT:
TELEPHONE:

E-MAIL ADDRESS:

COMMAND/SHOP: NPS Monterey, Meterology Department

SURVEY REPORT: 62771-09-8

INSTRUCTIONS TO FOREMAN/SUPERVISOR: The industrial hygiene survey evaluated the potential hazards to your employees based on the operations existing at the time. When your operations change, the potential hazards can also change, and these new conditions must be evaluated. Please contact the Industrial Hygienist if any of the following occur:

a. New operations are performed
b. New chemical products
c. An increase in major chemical usage
d. New equipment is used
e. Exposure frequency and time change
f. A change in exhaust ventilation

List any changes below.

_____

_____

_____

_____

Date forwarded: _____