From: Officer in Charge, Naval Medical Administrative Unit, Monterey
To: Superintendent, Naval Postgraduate School, Monterey,
    1 University Circle, Monterey CA 93943-5100

Subj: PERIODIC INDUSTRIAL HYGIENE SURVEY OF NAVAL POSTGRADUATE SCHOOL,
       MONTEREY, CODE 06, GRADUATE SCHOOL OF OPERATIONS AND INFORMATION
       SCIENCE

Ref: (a) OPNAVINST 5100.23E, Section 0803.a

Encl: (1) Industrial Hygiene Survey Report ET-0175

1. As required by reference (a), a periodic industrial hygiene survey of the
   Naval Postgraduate School, Monterey, Code 06, Graduate School of Operations
   and Information Science was conducted on 25 January 2002 by the Naval Medical
   Administrative Unit, Monterey Industrial Hygienist. The survey report ET-0175
   is forwarded as enclosure (1).

2. Due to the size and complexity of your command, separate reports will be
   issued as surveys of individual departments are completed to ensure the
   timeliness of the information. This survey is a service provided under the
   overall Occupational Health Program. It is not an inspection report but is
   designed to assist your Command's Occupational Safety and Health Program by
   identifying and evaluating actual and potential occupational health hazards
   and the status of their controls.

3. Since there were no findings or recommendations, a response to this report
   is unnecessary; rather, it is forwarded for your information and records
   only.

4. Further clarification or consultation with respect to this report is
   available from Eric Thurston at commercial (831) 656-3466, e-mail
   sethurst@nps.navy.mil.

S.E. THURSTON
By direction

Copy to:
Industrial Hygiene Department, NAVHOSP Lemoore
Administrative Support Department, NAVHOSP Lemoore
Army Medical Clinic, POM/DLI, Occ Health Division
NAVAL MEDICAL ADMINISTRATIVE UNIT, MONTEREY

INDUSTRIAL HYGIENE SURVEY

of

NAVAL POSTGRADUATE SCHOOL, MONTEREY

CODE 06, GRADUATE SCHOOL OF OPERATIONS
AND INFORMATION SCIENCE

SURVEY #ET-0175

25 January 2002

Survey Conducted By: Eric Thurston,
Industial Hygienist
# TABLE OF CONTENTS

Executive Summary........................................................2
Glossary/Common Abbreviations..................................................3

Section I.  INTRODUCTION................................................5
   Report Organization..........................................................5
   Survey Schedule......................................................................6
   Change of Operation Notification.........................................6

Section II.  Navy Occupational Safety and Health Program Reviews......7
Section III. Industrial Hygiene Assessment........................................8
Section IV.  Industrial Hygiene Survey Data ..................................10
Section V.  Medical Surveillance Matrix..........................................11
Section VI. Workplace Monitoring Program......................................12

Appendix A.  Industrial Hygiene Assessment OPNAV 5100/14 Form...........13
Appendix B.  Change of Operation Notification Form............................16
EXECUTIVE SUMMARY

No problems or findings were noted. A resurvey of this department will not be required until 2006 unless processes and procedures change.

Specific details of these findings can be found in sections II and III of this report. The cooperation of Sue Netzorg, the Code 06 point of contact for the survey, was greatly appreciated.
## COMMON ABBREVIATIONS AND GLOSSARY

(The following abbreviations may be used in this report)

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Governmental Industrial Hygienists</td>
</tr>
<tr>
<td>ACM</td>
<td>Asbestos Containing Material.</td>
</tr>
<tr>
<td>AL</td>
<td>Action Level. Normally ½ PEL. Exposure level at which air sampling, employee training, medical surveillance are required.</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute. A national consensus standards developing organization.</td>
</tr>
<tr>
<td>Ceiling</td>
<td>A toxic material exposure level which cannot be exceeded for any length of time.</td>
</tr>
<tr>
<td>CFM</td>
<td>Cubic feet per minute. Air flow rate.</td>
</tr>
<tr>
<td>dBA</td>
<td>A sound level reading in decibels as measured on the A-weighted network of a sound level meter.</td>
</tr>
<tr>
<td>EL</td>
<td>Excursion Limit. Is a concentration limit which cannot be exceeded at any time.</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency.</td>
</tr>
<tr>
<td>f/cc</td>
<td>Fibers per cubic centimeter. A means for expressing airborne asbestos fiber concentrations.</td>
</tr>
<tr>
<td>FPM</td>
<td>Feet per minute.</td>
</tr>
<tr>
<td>HAZCOM</td>
<td>Hazard communication. A system for training employees about job hazards through the use of chemical inventories, MSDSs, labels, and personnel training.</td>
</tr>
<tr>
<td>HCP</td>
<td>Hearing Conservation Program. A program to prevent hearing loss from exposure to noise through the use of hearing protection, training, and medical surveillance.</td>
</tr>
<tr>
<td>HEPA</td>
<td>High-efficiency particulate air filter. A filter capable of trapping and retaining 99.97% of 0.3 micron diameter, or larger, particles.</td>
</tr>
<tr>
<td>HM</td>
<td>Hazardous material. A material which is a physical or health hazard per 29 CFR 1910.1200.</td>
</tr>
<tr>
<td>HW</td>
<td>Hazardous waste. Any discarded or abandoned hazardous substance as defined in 40 CFR 261.</td>
</tr>
<tr>
<td>LEV</td>
<td>Local exhaust ventilation. Exhaust system at source of contamination.</td>
</tr>
<tr>
<td>mg/m³</td>
<td>Milligrams per cubic meter of air. A means for expressing concentrations of dust and metal fumes in air.</td>
</tr>
<tr>
<td>MMVF</td>
<td>Man made vitreous fibers. (Fiberglass, mineral wool, ceramics)</td>
</tr>
<tr>
<td>MSAL</td>
<td>Medical Surveillance Action Level. A concentration of an air contaminant at which medical surveillance examinations must be provided to exposed personnel.</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheet. A form used by manufacturers to communicate to users the chemical and physical properties of their products.</td>
</tr>
<tr>
<td>NAVOSH</td>
<td>Navy Occupational Safety and Health</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health. Recommends safety and health standards for OSHA.</td>
</tr>
<tr>
<td>NOEL</td>
<td>Navy Occupational Exposure Limit.</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration.</td>
</tr>
<tr>
<td>OV</td>
<td>Organic vapors.</td>
</tr>
<tr>
<td>PCB</td>
<td>Polychlorinated Biphenyl</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit. The maximum permissible allowable exposure level of a toxic chemical or harmful physical agent (normally averaged over 8 hours) to which an employee may be exposed.</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment. Clothing or devices furnished to protect employees in performance of work in potentially hazardous areas or conditions.</td>
</tr>
<tr>
<td>ppm</td>
<td>Parts per million. A means for expressing the concentration of gases and vapors in air.</td>
</tr>
<tr>
<td>RFR</td>
<td>Radiofrequency/Microwave Radiation.</td>
</tr>
<tr>
<td>RPPM</td>
<td>Respiratory Protection Program Manager.</td>
</tr>
<tr>
<td>SCBA</td>
<td>Self Contained Breathing Apparatus.</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedures.</td>
</tr>
<tr>
<td>STEL</td>
<td>Short term exposure limit. A 15 minute time weighted average exposure which should not be exceeded at any time during a workday.</td>
</tr>
<tr>
<td>Stressor</td>
<td>Potential Hazard (e.g. Noise, Chemicals, Dusts)</td>
</tr>
<tr>
<td>TLV</td>
<td>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 day after day basis without adverse effect.</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average. A method for averaging varying concentrations over a specified period of time (usually 8 hours).</td>
</tr>
<tr>
<td>WC</td>
<td>Work Center</td>
</tr>
<tr>
<td>WMP</td>
<td>Workplace Monitoring Program. A program to evaluate workplace health hazards through surveys and exposure measurement.</td>
</tr>
</tbody>
</table>
SECTION I

INTRODUCTION

The Code 06 Graduate School of Operations and Information Science provides support for the application of advance technology to the battlefield. Tasks performed are limited to classroom instruction, academic research, and administrative/clerical support within the group.

If an operation has been overlooked or significant changes made which are believed to put personnel at serious risk, the industrial hygienist should be contacted, and a reevaluation requested.

REPORT ORGANIZATION

Reference: (a) OPNAVINST 5100.23E, Section 0803.f

Section I - contains the background information associated with this report and the schedule for follow-up surveys.

Section II - addresses the status of the department's occupational health programs and a short overview of each program's status.

Section III - Contains industrial hygiene assessments of specific work areas. These assessments address the status of workplace hazards and required control procedures. No deficient conditions were noted nor were any recommended improvements required.

Section IV - contains the results of all the sampling/monitoring data conducted in support of this survey.

Section V - identifies the occupational health medical surveillance requirements for each work area based on survey findings.

Section VI - details the sampling required to be conducted for OSHA or NAVOSH regulated stressors or stressors which have been found to result in personnel exposures equal to or in excess of the MSAL.

Appendix A - contains the OPNAV 5100/14 forms which are required by reference (a). These forms detail the occupational exposures of departmental personnel.

Appendix B - is a copy of the Change In Operation Notification form, which should be filled out whenever a major operational change occurs. By returning the completed forms to the industrial hygienist, all new operations can be evaluated as required by reference (a). This form can be copied as needed for your use.
SURVEY SCHEDULE

References: (a) OPNAVINST 5100.23E, Chapter 8, Sections 0803.b and c
(b) OPNAVINST 5100.23E, Chapter 8, Paragraph 0803.g

In accordance with reference (a), each workplace must be thoroughly evaluated to identify and quantify potential occupational hazards. To document these evaluations, an initial comprehensive (baseline) survey is needed, followed by periodic updated surveys. Reference (b) requires workplaces with recognized potential health hazards to be evaluated annually, and other workplaces to be evaluated periodically. Medical surveillance recommendations and a workplace monitoring plan are developed from the findings of these surveys. Any comments or suggestions regarding these survey schedules should be forwarded to the industrial hygienist. The year of the last survey appears after each work center listing.

WORKPLACE SURVEY SCHEDULE

<table>
<thead>
<tr>
<th>Annual Required</th>
<th>2 Year Schedule</th>
<th>4 Year Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 06(2002)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Change of Operations Notification:

Reference (b) requires an industrial hygiene re-evaluation when workplace changes occur. Please notify the industrial hygienist via your Safety Office whenever major changes occur in a workplace. Examples of major changes include:

- Exposure times have changed.
- New types of equipment are used.
- New chemical/chemical product usage.
- New operations are performed.
- Increase in major chemical usage.
- Changes in exhaust ventilation.

A "CHANGE OF OPERATIONS NOTIFICATION" form is provided in Appendix B and can be used for this purpose. Copy the form as needed for your use.
SECTION II  
NAVAL OCCUPATIONAL SAFETY AND HEALTH  
PROGRAM REVIEWS  

The following programs are not required to be maintained by Code 06 because these hazards are not present:  

- Asbestos Control  
- Bloodborne Pathogens Control  
- Hazardous Material Control  
- Hearing Conservation  
- Lead Control  
- Manmade Vitreous Fibers Control  
- Non-Ionizing Radiation Control  
- Polychlorinated Biphenyls (PCB’s) Control  
- Process Control Ventilation  
- Reproductive Hazard Control  
- Respiratory Protection  

ERGONOMICS PROGRAM  

Code 06 personnel perform classroom instruction and clerical duties. No injuries have occurred from use of desktop or notebook computers. Heavy lifting occasionally performed if items need to be moved before this work can be performed by the Public Works moving team.  

Recommendations: None. Provided for your records and information only.
SECTION III

INDUSTRIAL HYGIENE ASSESSMENTS
FUNCTION: The Code 06 Graduate School of Operations and Information Science provides support for the application of advance technology to the battlefield. Tasks performed are limited to classroom instruction, academic research, and administrative/clerical support within the group.

The school consists of 4 departments: Operations Research, Defense Analysis, Information Systems (which combines the old Systems Tech Lab, Information Warfare, Undersea Warfare, and C3 academic groups and the Computer Science Department). The Space Systems Department is no longer part of this School.

Surveys of the Operations Research and Computer Science Departments were previously and separately reviewed in 2000 and 2001, respectively. The other departments occupy the following spaces in Root Hall:

Root Hall

Room 200A, Administrative Office  Room 204B, Storage
Room 200B, Conference Room  Room 205 A-D, Offices
Rooms 200C-E, Classroom  Rooms 206 and 207, Offices
Rooms 201A-J, Offices  Room 208, Classroom
Room 202, Computer Laboratory  Rooms 209-219, Offices
Rooms 202 A and B, Storage  Room 223, Office
Room 202C, Office  Rooms 224 A and B, Storage
Rooms 203 A-E, Offices  Room 227, Office
Room 204A, Computer Laboratory

INDUSTRIAL HYGIENE ASSESSMENT

The above operations do not expose personnel to hazardous occupational stressors.

There are no operations that expose personnel to stressors identified by OPNAVINST 5100.23E, Chapter 29, Appendix 29-A as reproductive hazards.

RECOMMENDATIONS: None.

FINDINGS: None.
SECTION VI
INDUSTRIAL HYGIENE SURVEY DATA

This Section contains the sampling/monitoring conducted in support of this survey. It should be noted that the measured levels of chemical and physical hazards are compared to the standards without regard to any personal protective equipment that may be worn or the protection afforded by it. The goal of the NAVOSH Program is to reduce workplace hazard levels by other means so that personal protective equipment is not required.

The sampling and analyses performed in support of this survey follow methods approved and validated by OSHA, NIOSH, or by other appropriate Naval instructions. When such methods are either unavailable or not applicable, other consensus methods may be used. In all cases, accepted professional industrial hygiene practices are followed. Documentation concerning the types of instruments used and their calibration records are held by the Naval Medical Admin Unit, Monterey Bay industrial hygienist.

No new data was collected in support of this survey.
SECTION V

MEDICAL SURVEILLANCE MATRIX

The Medical Surveillance Matrix is provided to assist commands in assigning personnel to required medical surveillance. Enrollment in medical surveillance programs is based on exposure levels at or above the MSAL and exposure frequency of ten days per quarter or thirty days per year, or as required by regulations or instruction. Enrollment in any occupational health programs as the result of exposure to potential hazards is not recommended for any Code 10AS personnel.

Medical surveillance program enrollment of Code 06 personnel as a result of exposure to occupational health hazards is unnecessary.
SECTION VI

WORKPLACE MONITORING PROGRAM

The attached Workplace Monitoring Plan presents stressors and/or systems which need to be evaluated periodically during the coming year. Items included on the plan are based on regulations, professional knowledge and information obtained from supervisors. The plan should be reviewed to ensure operational information is correct. The industrial hygienist will have to be contacted when operations are scheduled so your Command's sampling can be completed. Changes or deletions of operations should also be communicated to the industrial hygienist so that the Workplace Monitoring Plan can be amended.

Naval Postgraduate School, Monterey

Code 06, Graduate School of Operations and Information Science

WORKPLACE MONITORING PLAN

Date prepared: 29 January 2002

<table>
<thead>
<tr>
<th>LOCATION/JOB</th>
<th>STRESSOR</th>
<th># MEAS.</th>
<th>MEAS.</th>
<th>MEASURING</th>
<th>MAN HRS.</th>
<th>FREQUENCY</th>
<th>PER YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>None required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


1: Use the following codes to indicate sampler and sampling location:

**SAMPLER:**
- DR-direct reading instrument
- DT-detector tube
- AT-adsorption tube
- IM-impinger/bubbler
- FI-filter
- ND-noise dosimeter
- PD-personal dosimeter
- OT-other (specify)

**SAMPLING LOCATION:**
- GA-general area
- BZ-breathing zone
- HZ-hearing zone
- SZ-source zone
- OT-other (specify)
APPENDIX A

OPNAV 5100/14 Forms

Reference: (a) OPNAVINST 5100.23E, paragraph 0803.f

This appendix contains the OPNAV 5100/14 forms which are required by reference (a). These forms detail the occupational exposures of employees by work center or functional group. These forms are used to develop the workplace monitoring program in Section VI. They also describe the type of work done in each area and can be used to verify that all work areas were included in the survey.
WORKPLACE INFORMATION

Activity: NPS Monterey  Supervisor: Dean W. Hughes  Phone: (831)656-2081

Bldg#: 235, Root Hall, 2nd Floor  Shop: Code 06, Graduate School of Operations and Information Science

Total Personnel: 125  Male: 90  Female: 35

Shop Operation: The Code 06 Graduate School of Operations and Information Science provides support for the application of advance technology to the battlefield. Tasks performed are limited to classroom instruction, academic research, and administrative/clerical support within the group.

The school consists of 4 departments: Operations Research, Defense Analysis, Information Systems (which combines the old Systems Tech Lab, Information Warfare, Undersea Warfare, and C3 academic groups and the Computer Science Department). The Space Systems Department in no longer part of this School.

Surveys of the Operations Research and Computer Science Departments were previously and separately reviewed in 2000 and 2001, respectively. The other departments occupy the following spaces in Root Hall:

Root Hall

Room 200A, Administrative Office  Room 204B, Storage
Room 200B, Conference Room  Rooms 205 A-D, Offices
Rooms 200C-E, Classroom  Rooms 206 and 207, Offices
Rooms 201A-J, Offices  Room 208, Classroom
Room 202, Computer Laboratory  Rooms 209-219, Offices
Rooms 202 A and B, Storage  Room 223, Office
Room 202C, Office  Rooms 224 A and B, Storage
Rooms 203 A-E, Offices  Room 227, Office
Room 204A, Computer Laboratory

The Space Systems Department was the group who were cited as performing electronics repair (minimal lead-tin soldering and use of small amounts of isopropyl alcohol for cleaning electrical connections).

<table>
<thead>
<tr>
<th>Potential Hazard</th>
<th>Inter or Cont.</th>
<th># Workers Exposed</th>
<th>Exposure &gt; MSAL?</th>
<th>Controls in Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Reproductive hazard (See I. H. assessment)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If no exposure > MSAL, provide rationale: The procedures listed above do not expose personnel to chemical or physical occupational health hazards.

Signature/Title: ________________________________ Date: 29 January 2002

S.E. Thurston,
Industrial Hygienist
### MONITORING PLAN

<table>
<thead>
<tr>
<th>Stressor to be Sampled</th>
<th># of Meas.</th>
<th>* Measure.</th>
<th>**Measure.</th>
<th>Frequency</th>
<th>Man Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Engineering Controls in Use**

| None      |          |            |            |           |          |

* Use the following Codes:  
  DR-direct reading instrument  
  DT-detector tube  
  AT-adsorption tube  
  IM-impinger/bubbler  
  FI-filter  
  PD-personal dosimeter  
  ND-noise dosimeter  
  OT-other (specify)

** Use the following Codes:  
  GA-general area  
  BZ-breathing zone  
  HZ-hearing zone  
  SZ-source zone  
  OT-other (specify)
APPENDIX B

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 may be copied as needed. The completed forms can be returned to:

NAVAL POSTGRADUATE SCHOOL, MONTEREY
CODE 223, SAFETY OFFICE (ATTN: INDUSTRIAL HYGIENIST)
1 UNIVERSITY CIRCLE
MONTEREY CA 93943

FOREMAN/SUPERVISOR:                                            EXT:

BLDG:          COMMAND/SHOP: NPS Monterey,
                Code 06, Graduate
                School of Operations
                and Information Science

WORK AREA:

SURVEY REPORT:  ET-0175

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. Exposure times have changed.
b. New operations are performed.
c. New types of equipment are used.
d. An increase in major chemical usage.
e. New chemicals or chemical products are used.
f. A change in existing exhaust ventilation.

List any changes below.

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

_________________________________________________________________________

Date Forwarded:_______________________

16