

**MEDICAL SURVEILLANCE
PROCEDURES MANUAL
AND
MEDICAL MATRIX
(EDITION 10)**



NAVY AND MARINE CORPS PUBLIC HEALTH CENTER

BUREAU OF MEDICINE AND SURGERY

MEDICAL SURVEILLANCE PROCEDURES MANUAL AND MEDICAL MATRIX

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FORWARD

This 10th Edition of the Medical Surveillance Procedures Manual and OEM Medical Matrix is the result of collaborative efforts and work by a group of subject matter experts from across the Department of Defense. It is a dynamic document that has been built on the efforts of Occupational and Environmental Medicine professionals for almost 20 years. We would like to acknowledge some of the individuals that have contributed to this document in recent years.

Dee Bates, RN
Susan B. Davis, RN
Kathy Edwards, RN
CDR Dale Harmon, MD
Scott Jackson, RN
LTC Terry Lakin, MD
COL Tim Mallon, MD
CDR Michael Meier, MD
Denise Mullins, RN
Mari Pohlhaus, RN
Loretta Roberts

COL James Bennion, MD
Linda Day, RN
Robert Edwards, CIH
CAPT William Hurst
CAPT Chris Jankosky, MD
CAPT Ken Lankin, MD
Sue Mason
CDR Melissa Mohon, MD
Lori O'Berry, RN
LCDR Margaret M. Read, OD
Richard Thomas, MD

Ruth Callaghan, RN
J. Georgette Dougherty, RN
CAPT Mark Hammett, MD
Tom Hutchison, MA
LCDR Michael Jacobs, MD
LCDR Jon Lieske, MD
CDR David McMillan, MD
John Muller, MD
M. Debra Parker, JD
LCDR Brian Riley

The members of the 2010-2012 Medical Matrix Committee contributing to the approval process for changes in this edition are:

Karen Allstadt, MD
CAPT Mark Hammett, MD
LCDR Michael Jacobs, MD
Lori O'Berry, RN

Dee Bates, RN
CDR Matt Hickey, MD
CDR Michael Meier, MD
Karen Stoops, RN

Linda Day, RN
CAPT Chris Jankosky, MD
John Muller, MD

This document will be regularly updated. The latest version may be found on the Navy and Marine Corps Public Health Center, Occupational and Environmental Medicine Department Web site at the following Internet address:

http://www-nmcpHC.med.navy.mil/Occupational_Health/Occupational_Medicine/ohn_medmatrix.aspx

Reviewed and approved



LESLIE L. SIMS, MSC, USN
Commanding Officer, Acting

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Chapter 1:

C1. Medical Screening

A medical screening examination as part of a medical surveillance program is one of several tools aimed at protecting workers who are exposed or potentially exposed to hazardous substances in the workplace. Exam content is established in the Medical Matrix for performing hazard based medical examinations and certification examinations. THIS DOCUMENT ESTABLISHES THE MINIMUM REQUIREMENTS FOR MEDICAL SURVEILLANCE AND CERTIFICATION EXAMINATIONS. These requirements are based on a number of sources. They may be based on statutory regulations and instructions (as listed at the end of each examination program), standards that have been recommended by the National Institute of Occupational Safety and Health (NIOSH) and accepted by the Medical Matrix Committee, or by evidence based medical research that has been evaluated and accepted by the Medical Matrix Committee.

A medical surveillance program includes establishing exam content, performing occupational medical examinations, documenting results of examinations, informing the employee of the results of examination, following up abnormalities, counseling and education, and evaluating grouped data for trends and sub-clinical effects of exposure.

Selection of personnel for medical surveillance programs is based primarily on the results of the industrial hygiene survey and is exposure driven. This is known as "hazard based" medical surveillance. In the absence of industrial hygiene data, medical personnel will make a decision on placement in medical surveillance programs based on knowledge of the workplace processes, job requirements, and occupational history.

Special attention in performing occupational medical examinations is given to those target organs or organ systems potentially subject to the untoward effects of hazardous substances whether by inhalation, absorption or ingestion. Elements of examination include specific history questions (personal and family medical history, and work history), physical examination, x-ray, biological monitoring (testing of body fluids or tissues for the toxic substance itself, a metabolite or a physiologic change), and other laboratory and ancillary tests such as EKG, PFT and audiogram. Conducting occupational medical examinations to detect early organ dysfunction or early disease to benefit individual workers is "screening" or "monitoring" and constitutes secondary prevention.

An integral component of the occupational medical examination is follow-up. Follow-up may include notification, additional tests or evaluation, evaluation or modification of the workplace or removal from exposure. Workers who receive occupational medical examinations should be informed of any specific health risks identified on examination. Certain OSHA programs require written notification in the form of physician's/provider's written opinions. Examples are included in C10.2, Physician's/Provider's Written Opinion Samples.

C1.1. Types of Occupational Medical Examinations

Most medical surveillance programs consist of examinations for baseline (preplacement), periodic and termination. If there is evidence of overexposure, a situational examination will be required. Guidelines for situational examinations are not included in the Medical Matrix.

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C1.1.1. Baseline Examination (Preplacement or Pre-Assignment)

This examination is performed before the employee starts work in a position with a potential for hazardous exposure and provides information necessary to determine suitability of the employee for the job. It also provides a baseline against which changes can be compared.

C1.1.2. Periodic Examination

This examination is performed during the time that a worker is employed in a job with a potential for exposure to hazardous substances. The frequency and extent of periodic examinations vary, depending on the program. With certain stressors, the frequency of examinations will also depend on other variables, such as the findings from previous examinations, the history of exposure or the age of the worker.

C1.1.3. Termination Examination

This examination may be required when the worker terminates employment or is permanently removed from a position that has a potential for exposure to a hazardous substance. Documentation of the worker's state of health at the termination of employment or exposure is essential for comparison purposes if the worker later develops medical problems that could be attributed to past occupational exposures. In some cases, this examination is not required if a periodic examination has been documented within the past twelve months. Specific program references provide guidelines.

C1.1.4. Situational Examination

This examination is conducted in response to a specific incident for which a possible overexposure to a hazardous substance is suspected. Such an incident should prompt these examinations on all individuals with suspected overexposure, not just those already in a surveillance program. These examinations may vary significantly from routine medical surveillance protocols. Guidelines for performing situational examinations are not provided in this manual. The purpose of this manual is to provide guidance for performing routine medical surveillance.

C1.2. Twelve Standard Questions

There are twelve (12) standard questions included in each Medical Matrix program designed to help assess public health and safety risk factors for each worker. These questions were written for inclusion in data collection protocol when developed. The standard twelve questions are:

1. Is Your Work Exposure History Current (OPNAV 5100/15)
2. Major Illness or Injury
3. Hospitalization or Surgery
4. Cancer
5. Back Injury
6. Do you drink 6 or more drinks per week?
7. Have you ever smoked?
8. Do you currently smoke? (__Packs/day)
9. Heart Disease, High Blood Pressure or Stroke
10. Current Medication Use (Prescription or Over-The-Counter)
11. Allergies (Include Medications)
12. Any reproductive health concerns?

C1.3. References

1. Halperin W, Ratcliffe J, Frazier T, et al. Medical Screening in the workplace: proposed principles, *J Occup Med.* 1986; 28:547-552.
2. Matte T, Fine L, Meinhardt T, et al. Guidelines for medical screening in the workplace, *Occup Med.: State of the Art Reviews.* 1990; 5:439-456.
3. Silverstein M. Medical Screening, Surveillance, and the Prevention of Occupational Disease. *J Occup Med.* 1990;32:1032-1036.
4. Baker E, Honchar, P, Fine, L, et al. Surveillance in Occupational Illness and Injury: Concepts and Content, *Am J. of Public Health.* 1989;79:9-11.
5. Sorgdrager B, Hulshof CT, van Dijk FJ. Evaluation of the effectiveness of pre-employment screening. *Int Arch Occup Environ Health.* 2004 May; 77(4):271-6.
6. Eckebrecht T. Occupational standards for the protection of employees in biotechnology. *Int Arch Occup Environ Health.* 2000 Jun; 73 Suppl:S4-7.
7. Rawbone RG. Future impact of genetic screening in occupational and environmental medicine. *Occup Environ Med.* 1999 Nov; 56(11):721-4.

Chapter 2:

C2. Placement of Workers in Medical Surveillance Programs

C2.1. Hazard Based Medical Surveillance

Workers with potential exposure to hazards are usually placed in medical surveillance programs based on industrial hygiene (IH) and/or safety surveys that quantify exposures in the workplace. This has been called "hazard based" medical surveillance. Workplace hazard assessment takes into account exposure levels (frequency and duration), and routes of exposure (inhalation, skin absorption or ingestion), and similarly exposed groups.

The decision to include a worker in a program is normally based on the possibility of exposure at or above the action level set by U.S. Navy standards that must comply with Occupational Safety and Health Administration (OSHA) standards. If insufficient data or no data are available, medical personnel may place workers in medical surveillance based on "presumed" exposures and job title. When this happens, workers medical surveillance needs must be reassessed as IH data are obtained.

A worker should be placed into medical surveillance programs under the following conditions:

1. His or her job is associated with exposures to hazards at or above the medical surveillance action level for more than 30 days per year.
2. His or her job is associated with exposures to hazards at or above the medical surveillance action level for 15 days per quarter.
3. The worker has significant skin exposures to chemicals with "SKIN" notations on the ACGIH TLV tables.

When there is no legal standard for medical examinations for specific agents, or when there are insufficient data to demonstrate compliance with a high degree of confidence, half of a recommended exposure limit, (i.e., Threshold Limit Value), may be used as the action level. Some programs have specific guidance for placement: asbestos, organophosphate pesticide workers, hearing conservation, and radiation workers.

If there is a hazard that meets the above criteria for medical surveillance, but no program exists, then please contact NMCPHC by email: Ask-NMCPHC@med.navy.mil

Chapter 3:

C3. How to Use the Medical Matrix

C3.1. History of Development of the Medical Matrix

The Medical Matrix Validation Committee was formed in March 1988. Its tasking was to review an existing Medical Matrix and design a program that would define hazard based medical surveillance. The goal of the Committee was to develop standard examination protocols for medical surveillance programs that could be presented in a useable format. The original Matrix was published as a Navy and Marine Corps Public Health Center Technical Manual in January 1989.

The Medical Matrix Committee continues to review existing programs, evaluate the need for, and write new programs for those stressors that have chronic health effects. See [C8, Reviews and Revisions](#) for a list of those stressors reviewed and for which no evidence of chronic health effects could be found. This list will be reviewed periodically and amended as new information indicates.

Situations may arise where industrial hygiene data indicate potential overexposure to a stressor, but there is no corresponding matrix program for that stressor. An occupational medicine specialist may substitute a closely related matrix program after review of the toxicity of the stressor. Any appropriate modifications can be hand written on the forms generated. Request for review of a new program should be sent to the Matrix Committee (see, [Suggested or Requested Changes in the](#) Medical Matrix).

C3.2. Explanation of Contents

The Medical Matrix, Edition 10, contains medical surveillance and certification examinations divided into four major sections with each section preceded by a brief introduction. Each program is organized in the same format:

- First, medical history questions; personal, work and family.
- Second, recommended laboratory or ancillary (EKG, PFT, audiogram) tests.
- Third, areas which should be targeted on physical examination (ex: central nervous system (CNS), respiratory system, liver)
- Last, special requirements such as qualification and certification are listed, followed by special notations such as warnings, assessment of knowledge and requirement for Physician's/provider's Written Opinion.

Each section ends with a line prompting for comments on that section, if indicated.

Following each program is a Program Description section that includes:

- General references are included as numbers that correspond to the reference list found in [General References](#). These general texts were used in developing each program and are additional resources. Specific references such as Navy instructions, OSHA Standards, Department of Defense, Office of Civilian Personnel Management or Civilian Personnel Instructions are listed in the program description. NOTE: References listed were current at the time of publication. However, individual users are cautioned of their responsibility to ensure use of the most current edition or version.
- Detailed guidance and interpretation may be included to further explain the program.
- Date of most recent revision.
- Web sites when available.

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Following the Program Description section, the Provider Comments section may contain more detailed information about the program including guidance about the examination, such as how to interpret test results, and what to do with test results that are outside the range of normal.

C3.3. Four Divisions of the Matrix

[Chemical Stressors](#)

[Physical Stressors](#)

[Mixed Exposures](#)

[Specialty Examinations](#)

C4. Chemical Stressors

A [Chemical Stressors List](#) with Medical Surveillance and Biological Exposure Indices (BEI) Information and Skin Notation spreadsheet was developed by the Navy and Marine Corps Public Health Center, Industrial Hygiene Department to provide a quick reference resource for determining the medical surveillance procedure requirements for a specific chemical stressor and to provide a list of chemicals that fall under a specific medical surveillance program (Medical Matrix Number). **This list of chemicals comes from the latest Navy Occupational Exposure Database (NOED) and is not all inclusive of chemicals one may encounter in the workplace. It provides examples of chemicals that would fall under a specific medical surveillance program.** The spreadsheet is also useful in determining which chemicals lack a medical surveillance program. The spreadsheet also provides a quick reference for Biological Exposure Indices and Skin Notations. This quick reference was designed to be beneficial to both the Occupational Healthcare Providers (Occupational Health Physicians and Nurses) and the Industrial Hygienists. Click on the [Chemical Stressors List](#) with Medical Surveillance and BEI Information and Skin Notation hyperlink to access this spreadsheet.

Chemicals designated with a “Skin” notation are marked TRUE. The “Skin” notation refers to the potential significant contribution to the overall exposure by cutaneous route, including mucous membranes and the eyes, by contact with vapors, liquids, and solids. Where dermal application studies have shown absorption that could cause systemic effects following exposure, a “Skin” notation would be considered. **A “Skin” notation should alert the industrial hygienist that overexposure may occur following dermal contact; even when airborne exposures are at or below the Occupational Exposure Limit (OEL).** Biological monitoring should be considered to determine the relative contribution to the total dose from exposure via the dermal route. BEIs provide an additional tool when assessing the total worker exposure to selected materials. For additional information, refer to Dermal Absorption in the Introduction to the Biological Exposure Indices, ACGIH (2001).

C4.1. Introduction and Changes

C4.1.1. Significant Revisions:

- Program 103 – Acrylamide
- Program 104 – Acrylonitrile
- Program 105 - Allyl chloride
- Program 106 – 4-Aminodiphenyl
- Program 111/112 – Arsenic programs combined into one exam (#111 deleted)
- Program 122 - Boron trifluoride
- Program 217 – 1,3-Butadiene
- Program 124 – Cadmium, current exposure
- Program 206 – Cadmium, past exposure
- Program 126 – Carbon disulfide
- Program 127 – Carbon monoxide
- Program 128 – Carbon tetrachloride
- Program 130 – Chloroform
- Program 131 – Bis-chloromethyl Ether
- Program 132 – Beta-chloroprene

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- Program 133 – Chromic acid/Chromium (VI)
- Program 134 – Coal tar/Polycyclic aromatic hydrocarbons
- Program 168 – Methylene chloride (dichloromethane)
- Program 208 – Cobalt
- Program 506 – Radiation-Laser (Class 3b & 4)
- Program 721 – Explosive Handler
- Program 720 – Explosive Vehicle Operator
- Program 711 – Hazardous Waste Workers & Emergency Responders
- Program 706 – Motor Vehicle Operator (DOT) Vehicle Operators

2-ACETYLAMINOFLUORENE

102

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
2-acetylaminofluorene	AB9450000	53-96-3
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (include children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Substance(s) suspected human mutagenic/fetotoxic effects	Yes	Annual	Yes
Physician's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures?	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations?	Yes	Annual	Yes

PROGRAM DESCRIPTION:

This compound was being developed as a pesticide until carcinogenic activity was discovered.

In recent years, it has been used only in laboratories as a model of tumorigenic activity in animals. The use of this substance would be rare and current exposure risk is low at present.

REFERENCES:

1. [29 CFR 1910.1003](#)
2. [NIOSH Occupational Health and Safety Guidelines for 2-Acetylaminofluorene](#)

REVISED: SEPTEMBER 2009

ACRYLAMIDE

103

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #		
acrylamide	AS3325000	79-06-1		
	Program Frequency	Annual		
	EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes	
Shortness of breath	Yes	Annual	Yes	
Cough (dry or productive)	Yes	Annual	Yes	
Pneumonia	Yes	Annual	Yes	
Weight loss	Yes	Annual	Yes	
Neur disorder, gait change, paresthesia, coord loss	Yes	Annual	Yes	
Family history of:				
Cancers (leukemia, tumors)	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	
Physical examination:				
Vital signs	Yes	Annual	Yes	
Special attention in examination to:				
Respiratory system	Yes	Annual	Yes	
Central nervous system	Yes	Annual	Yes	
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes	
Other appropriate examination (specify)	Yes	Annual	Yes	
Comments on physical examination:	Yes	Annual	Yes	
Special notations:				
Substance(s) suspected human carcinogen	Yes	Annual	Yes	
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes	
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes	

PROGRAM DESCRIPTION:

REFERENCES:

[NIOSH Occupational Health and Safety Guidelines for Acrylamide](#)

REVISED: NOVEMBER 2009

ACRYLONITRILE (VINYL CYANIDE)

104

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
acrylonitrile	AT5250000	07-13-1	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness			
Chest pain, angina, heart attack	Yes	Annual	Yes
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Pneumonia	Yes	Annual	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with balance and coordination	Yes	Annual	Yes
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	Yes
Thyroid disease (heat or cold intolerance)	Yes	Annual	Yes
Depression, diff concentrating, excessive anxiety	Yes	Annual	Yes
Personality change	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST, ALT, total bilirubin, alk phos.	Yes	Annual	Yes
Additional lab tests:			
Stool hemocult (over age 40)	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes
Cardiovascular system	Yes	Annual	Yes
Abdomen	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Thyroid	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures?	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations?	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. OSHA Standard [29 CFR 1910.1045](#)
2. [29 CFR 1926.1145](#) --Acrylonitrile
3. NIOSH Occupational Health and Safety Guidelines for Acrylonitrile
<http://www.cdc.gov/niosh/docs/81-123/pdfs/0014.pdf>
4. DODI 6055.05-M, Table C2.T1, Acrylonitrile

REVISED: SEPTEMBER 2009

ALLYL CHLORIDE

105

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #		
allyl chloride	UC7350000	107-05-1		
	Program Frequency	Annual		
	EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Hepatitis or jaundice	Yes	Annual	No	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No	
Change or loss of vision	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Liver disease	Yes	Annual	No	
Kidney disease	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Serum chemistry:				
Liver profile to include:				
AST , ALT, Total Bilirubin, alkaline phosphatase	Yes	Annual	No	
BUN and creatinine	Yes	Annual	No	
Urinalysis:				
Routine Urinalysis with microscopic	Yes	Annual	No	
Radiology:				
Chest x-ray (PA)	Yes	No		
Spirometry:				
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No	
Comments on laboratory results:	Yes	Annual	No	
Physical examination:				
Vital signs	Yes	Annual	No	

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EXAM ELEMENT	BASE	PERI	TERM
Special attention in examination to:			
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

[NIOSH Recommended Standard for Allyl Chloride](#)

REVISED: OCTOBER 2009

4-AMINODIPHENYL

106

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
4-aminodiphenyl		DU8925000	92-67-1	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes	
decreased immunity				
Problems with urination/blood in urine	Yes	Annual	Yes	
Current pregnancy (self or spouse)	Yes	Annual	Yes	
Impotence or sexual dysfunction	Yes	Annual	Yes	
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes	
Family history of:				
Genetic disease (include children)	Yes	Annual	Yes	
Cancers (leukemia, tumors)	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	
Laboratory:				
Serum chemistry:				
Liver profile to include:				
AST , ALT, Total Bilirubin, alkaline phosphatase	Yes	Annual	Yes	
Urinalysis:				
Routine:				
Urinalysis with microscopic	Yes	Annual	Yes	
Comments on laboratory results:	Yes	Annual	Yes	
Physical examination:				
Vital signs	Yes	Annual	Yes	
Special attention in examination to:				
Immunocompetence (lymphatic system)	Yes	Annual	Yes	
Other appropriate examination (specify)	Yes	Annual	Yes	

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EXAM ELEMENT	BASE	PERI	TERM
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. [29 CFR 1910.1003](#)
2. [NIOSH Recommended Standard for 4-aminodiphenyl.](#)

REVISED: OCTOBER 2009

ANTIMONY

109

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
antimony	CC4025000	7440-36-0
antimony trioxide (handling & use)	CC5650000	1309-64-4

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week? (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Cardiology:			
Electrocardiogram	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	Annual	Yes
Spirometry:	Yes	Annual	Yes
Comments on laboratory results:			
Physical examination:			
Vital signs	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Special attention in examination to:			
Cardiovascular system	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Mucous membranes	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Based on NIOSH criteria document (2006), baseline spirometry, annual CXR, EKG and spirometry have been added.

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Antimony, September 2005](#)
2. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Antimony, September 1978](#)

REVIEWED: AUGUST 2009

ARSENIC

112

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
arsenic (inorganic & soluble compounds)	CG0525000	7440-38-2
calcium arsenate	CG0830000	7778-44-1
arsenic acid, lead (2+) salt (2:3)	CG0990000	3687-31-8
arsenic pentoxide	CG2275000	1303-28-2
arsenic trioxide	CG3325000	1327-53-3
sodium arsenate		7784-46-5
arsenic trichloride		7778-34-1
lead arsenate		3687-31-8

See [Chemical Stressors List](#) for additional compounds

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Coughing up blood (hemoptysis)	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	Yes
Work history of:			
10 or more yrs since first exposure to arsenic	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Radiology:			
Chest x-ray (PA)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes
Cardiovascular system	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Nasal mucosa (septal perforation)	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures listed on OPNAV 5100/15?	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Reference (1) requires International Labor Office UICC/Cincinnati (ILO U/C) rating of chest x-ray. This can be arranged through the local Radiology Department.

Sputum Cytology is not required.

When a specified examination has not been provided within six months preceding termination of employment, an examination must be provided upon termination of employment.

REFERENCE:

1. [29 CFR 1910.1018](#)
2. [NIOSH Recommended Standard for Arsenic](#)
3. [29 CFR 1910.134, Respiratory Protection](#) (Respirator program generally required)
4. Klaassen CD, Casarett & Doull's Toxicology: The Basic Science of Poisons 6th edition, McGraw-Hill 2001: 818-820;

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5. Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile
<http://www.atsdr.cdc.gov/toxprofiles/tp2.html>
6. DODI 6055.05-M, Table C2.T2, Arsenic-Inorganic

REVISED: OCTOBER 2009

ASBESTOS CURRENT WORKER

113

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
asbestos	CI6475000	1332-21-4
amosite	CI6477000	12172-73-5
anthophyllite	CA8430000	17068-78-9
chrysotile	CI6478500	12001-29-5
crocidolite	CI6479000	12001-28-4
	Program Frequency	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	Yes
Change in frequency or appearance of bowel movements	Yes	Annual	Yes
Any finding related to asbestos exposure?	Yes	Annual	Yes
Laboratory:			
Radiology			
Chest x-ray (asbestos) using NAVMED 6260/7 (Circle correct frequency)	Yes	Circle:	Yes
Age of employee:	15 to 35	35 to 45	45+
Years since first exposure:			
0 to 10	5 years	5 years	5 years
10+	5 years	2 years	1 year
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Qualifications:			
Respiratory protection	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Counseling regarding the combined effects of smoking and asbestos exposure	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures listed on OPNAV 5100/15?	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

Examination is required within 30 calendar days before or after termination of employment, if not examined within the last year.

PROVIDER COMMENTS:

Examination results are recorded on NAVMED 6260/5, REV (5/90), Periodic Health Evaluation. Workers examined for current exposure must complete DD 2493-1, Initial Examination, or DD 2493-2, Periodic Examination questionnaires.

OSHA standard requires a Physician's/provider's written Opinion. A sample is included in [Physician's/Provider's Written Opinion Samples](#). Amendment to the Standard (55FR 3724) requires that the employee be counseled regarding the increased risk of lung cancer attributable to the combined effects of smoking and asbestos exposure and that this is part of the Physician's/provider's Written Opinion.

1/06 – Gastrointestinal medical history questions added per OSHA standard Appendix H.

Until there is a change in International Labour Organization (ILO)/National Institute for Occupational Safety and Health (NIOSH) requirements (reference 5), chest x-rays must be plain film format (also called film screen radiography or FSR) for current asbestos workers.

REFERENCES:

1. [29 CFR 1910.1001](#)
(http://www.OSHA.gov/pls/OSHAweb/owadisp.show_document?p_table=STANDARD S&p_id=9995);
2. 29 CFR 1926.1101
3. [OPNAVINST 5100.23G, Chapter 17](#)
(<http://www.safetycenter.navy.mil/instructions/osh/510023/default.htm>);
4. [OPNAVINST 5100.19D, Chapter B1](#)
(<http://www.safetycenter.navy.mil/instructions/afloat/510019D.htm>).
5. NIOSH B Reader Information for Medical Professionals
(<http://www.cdc.gov/niosh/topics/chestradiography/breader-info.html>)
6. DODI 6055.05-M, Table C2.T3, Asbestos

REVIEWED: SEPTEMBER 2009

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ASBESTOS PAST WORKER - 0 TO 10 YEARS SINCE FIRST EXPOSURE 116

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
asbestos	CI6475000	1332-21-4
amosite	CI6477000	12172-73-5
anthophyllite	CA8430000	17068-78-9
chrysotile	CI6478500	12001-29-5
crocidolite	CI6479000	12001-28-4
	Program Frequency	5 yrs

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	5 yrs	
Special notations:			
Substance(s) known human carcinogen	Yes	5 yrs	
Counseling regarding the combined effects of smoking and asbestos exposure	Yes	5 yrs	
Is surveillance/PPE consistent with exposures listed on OPNAV 5100/15?	Yes	5 yrs	
Are any abnormalities related to exposures/occupations	Yes	5 yrs	
Recommendations:	Yes	5 yrs	

PROGRAM DESCRIPTION:

Military and civilian personnel who have a history of asbestos exposure during past federal employment or military service may be included in the Asbestos Medical Surveillance Program (AMSP), upon request, if any of the following criteria are met.

History of enrollment in the Navy AMSP.

History of participation in any operation where visible airborne asbestos dust was present, including but not limited to rip-outs, for approximately 30 days or more in the past.

The occupational health provider, with occupational medicine physician consultation, concludes that the individual had exposure to asbestos that meets the current OSHA criteria for placement in the medical surveillance program, or its equivalent, for approximately 30 days or more in the past.

An employee who is in the AMSP based on a history of past exposure may be removed from the AMSP upon request. An entry in the medical record on the SF 600 should document the rationale for removing the individual from the AMSP. In Addition, notify NAVMCPUBHLHCEN in writing the name and SSN of any individual incorrectly placed in the AMSP when that person is removed from the program.

While not required, a termination evaluation may be recommended in certain cases, such as those with a history of heavy exposure or when there has been a long interim since the last evaluation.

PROVIDER COMMENTS:

Amendment (55 FR 3724) to the OSHA Standard (29 CFR 1910.1001) requires that the employee be counseled regarding the increased risk of lung cancer attributable to the combined effects of smoking and asbestos exposure.

Spirometry (FEV1, FVC, FEV1/FVC %) and chest x-ray with B Reader interpretation are performed with each examination. The examination is documented on NAVMED 6260/5, Rev (5/90), Periodic Health Evaluation. A Physician's Written Opinion is not required to be given to workers for past exposure examination. The DD Form 2493-1 and DD Form 2493-2 are not required for past exposure examinations.

Although this program is used for formerly exposed workers (the OSHA standard applies to currently exposed workers), this risk communication on the multiplicative risk of continued smoking and former asbestos exposure should be discussed with the employee at each asbestos medical surveillance visit.

As radiograph protocols for past workers are not mandated by OSHA, either plain film (also called film screen radiography or FSR) or digital chest x-rays are acceptable for B-reading for past workers.

REFERENCES:

1. [OPNAVINST 5100.23](#) (current series), Chapter 17;
2. [OPNAVINST 5100.19](#) (current series), Chapter B1;
3. [Occupational Medicine Field Operations Manual, current edition](#)

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REVISED: SEPTEMBER 2009

ASBESTOS PAST WORKER 10+ YEARS SINCE FIRST EXPOSURE

115

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
Asbestos	CI6475000	1332-21-4
Amosite	CI6477000	12172-73-5
Anthophyllite	CA8430000	17068-78-9
Chrysotile	CI6478500	12001-29-5
Crocidolite	CI6479000	12001-28-4
	Program Frequency	Age dependent

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	YES	***	
Is surveillance/PPE consistent with exposures	YES	***	
Are any abnormalities related to exposures/occupations?	YES	***	
Recommendations:	YES	***	

*****FREQUENCY OF EXAMINATION**

AGE	FREQUENCY
15 To 34	5 yrs
35 To 44	2 yrs
45+	Annual

PROGRAM DESCRIPTION:

Military and civilian personnel who have a history of asbestos exposure during past Federal employment or military service may be included in the Asbestos Medical Surveillance Program (AMSP), upon request, if any of the following criteria are met.

History of enrollment in the Navy AMSP.

A history of participation in any operation where visible airborne asbestos dust was present, including but not limited to rip-outs, for approximately 30 days or more in the past.

The occupational health provider, with occupational medicine physician consultation, concludes that the individual had exposure to asbestos that meets the current OSHA criteria for placement in the medical surveillance program, or its equivalent, for approximately 30 days or more in the past.

An employee who is in the AMSP based on a history of past exposure may be removed from the AMSP upon request. An entry in the medical record on the SF 600 should document the rationale for removing the individual from the AMSP. In addition, notify NAVMCPUBHLHCEN in writing the name and SSN of any individual incorrectly placed in the AMSP when that person is removed from the program.

While not required, a termination evaluation may be recommended in certain cases, such as those with a history of heavy exposure or when there has been a long interim since the last evaluation.

PROVIDER COMMENTS:

Amendment (55 FR 3724) to the OSHA Standard (29 CFR 1910.1001) requires that the employee be counseled regarding the increased risk of lung cancer attributable to the combined effects of smoking and asbestos exposure.

Spirometry (FEV1, FVC, FEV1/FVC %) and chest x-ray with B Reader interpretation are performed with each examination. The examination is documented on NAVMED 6260/5, Rev (5/90), Periodic Health Evaluation. A Physician's Written Opinion is not required to be given to workers for past exposure examination. The DD Form 2493-1 and DD Form 2493-2 are not required for past exposure examinations.

Although this program is used for formerly exposed workers (the OSHA standard applies to currently exposed workers), this risk communication on the multiplicative risk of continued smoking and former asbestos exposure should be discussed with the employee at each asbestos medical surveillance visit.

As radiograph protocols for past workers are not mandated by OSHA, either plain film (also called film screen radiography or FSR) or digital chest x-rays are acceptable for B-reading for past workers.

REFERENCES:

1. [OPNAVINST 5100.23](#) (current series), Chapter 17;
2. [OPNAVINST 5100.19](#) (current series), Chapter B1;
3. [Occupational Medicine Field Operations Manual, current edition](#)

BENZENE

117

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
benzene		CY1400000	71-43-2	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: Have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Blood diseases (anemia)	Yes	Annual	Yes	
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes	
Bleeding abnormalities	Yes	Annual	Yes	
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes	
Liver disease	Yes	Annual	Yes	
Kidney disease	Yes	Annual	Yes	
Current pregnancy (self or spouse)	Yes	Annual	Yes	
Work history of:				
Exposure to benzene	Yes	Annual	Yes	
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes	
Exposure to ionizing radiation	Yes	Annual	Yes	
Exposure to carcinogens	Yes	Annual	Yes	
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	Yes	
Family history of:				
Blood diseases (anemia)	Yes	Annual	Yes	
Genetic disease (include children)	Yes	Annual	Yes	
Cancers (leukemia, tumors)	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	
Laboratory:				
Hematology:				
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes	
Differential white blood cell count	Yes	Annual	Yes	

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EXAM ELEMENT	BASE	PERI	TERM
Platelet count	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Peripheral nervous system	Yes	Annual	Yes
Abdomen	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

For employees who are or may be exposed to benzene at or above the action level [0.5ppm] \geq 30 days/ year; for employees who are or may be exposed to benzene at or above the PELs [1ppm] \geq 10 days/year; or for employees who have been exposed to more than 10 ppm of benzene for \geq 30 days

PROVIDER COMMENTS:

Guidance on emergency examinations, mandatory referrals to a hematologist or internist by the examining physician, and mandatory removal are contained in 29 CFR 1910.1028. For all workers wearing respirators for at least 30 days a year, cardiopulmonary examination and spirometry are required on initial examination and every three years.

DODI 6055.05-M requires PFTs every 3 years if worker is required to use a respirator \geq 30 days/yr

REFERENCE:

1. 29 CFR 1910.1028 and 1926.1128;
2. Goesline, BD, Biological and ambient monitoring of benzene in the workplace, Journal of Medicine, 1986, 28 (10):1051.
3. DODI 6055.05-M, Table C2.T4, Benzene
4. [NIOSH Occupational Safety and Health Guideline for Benzene](#)

REVIEWED: OCTOBER 2009

BENZIDINE

118

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
benzidine	DC9625000	92-87-5	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Decreased immunity	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Genetic disease (include children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Cytology:			
Urine cytology	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Special attention in examination to:			
Genitourinary tract	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

1. REFERENCE:
2. OSHA STANDARD [29 CFR 1910.1003](#) and 29 CFR 1926.1103
3. Former standard 29 CFR 1910.1010.

REVISED: SEPTMEBER 2009

BERYLLIUM

121

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
beryllium	DS1750000	7440-41-7
beryllium aluminum alloy	DS2200000	12770-50-2
beryllium chloride	DS2625000	7787-47-5
beryllium fluoride	DS2800000	7787-49-7
beryllium hydroxide	DS3150000	13321-32-7
beryllium oxide	DS4025000	1304-56-9

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Coughing up blood (hemoptysis)	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Pneumonia	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	Annual	Yes
Spirometry:			

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EXAM ELEMENT	BASE	PERI	TERM
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Use of the blood Beryllium Lymphocyte Proliferation Test (BeLPT) for medical screening is not recommended. The BeLPT should be used only for diagnostic purposes in persons with clinical history and symptoms which may be consistent with Chronic Beryllium Disease (CBD) or as part of a well defined research project. Anyone performing a beryllium-specific test should notify the Navy and Marine Corps Public Health Center, Occupational and Environmental Medicine Department.

On December 2004, OSHA filed a request for information to solicit input from concerned parties in an effort to create a new beryllium standard. As of April 2009, this process is ongoing; the ACGIH has been reduced the TLV = 0.05 µg/m³, the DOE (Rule 10 CFR 850) set an action level = 0.2 µg/m³, the NIOSH 8-hr REL = 0.5 µg/m³, and the OSHA PEL 8-hr TWA = 2.0 µg/m³.

REFERENCES:

1. United States Army. Beryllium Surveillance and Medical Monitoring Policy (2002).
2. United States Navy. Response to OSHA's Occupational Exposure to Beryllium; Request for Information (2003).
3. American Conference of Governmental Industrial Hygienists. Biological Exposure Index Feasibility Assessment for Beryllium and Inorganic Compounds (2002).
4. Fed Register #: 67:70707-70712, November 26, 2002

REVISED: SEPTMEBER 2009

BLOOD AND/OR BODY FLUIDS

178

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
blood and/or body fluids			
	Program Frequency	Baseline Only	
EXAM ELEMENT	BASE	PERI	TERM
Medical history:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	No	No
Major illness or injury	Yes	No	No
Hospitalization or surgery	Yes	No	No
Cancer	Yes	No	No
Back injury	Yes	No	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	No	No
Have you ever smoked	Yes	No	No
Do you currently smoke (packs/day)	Yes	No	No
Heart disease, high blood pressure, or stroke	Yes	No	No
Current medication use (prescription or OTC)	Yes	No	No
Medication allergies	Yes	No	No
Any reproductive health concerns	Yes	No	No
Have you ever been evaluated for latex allergy	Yes	No	No
Work history of:			
Exposure to potentially infectious body fluids	Yes	No	No
Comments on medical history:	Yes	No	No
Physical examination:			
Vital signs	Yes	No	No
Other appropriate examination (specify)	Yes	No	No
Comments on physical examination:	Yes	No	No
Qualifications:			
Is hepatitis B vaccine series complete or prior infection documented?	Yes	No	No
Special notations:			
Assess the examinee's knowledge of universal blood/body fluid precautions	Yes	No	No
Physician's/provider's written opinion required	Yes	No	No
Is surveillance/PPE consistent with exposures	Yes	No	No
Are any abnormalities related to exposures/occupations	Yes	No	No
Recommendations:	Yes	No	No

PROGRAM DESCRIPTION:

This program does not have a periodic frequency. All tests are given at baseline physical exams and for any incident of exposure to potentially infectious materials. Exposure incident

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means a specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact.

PROVIDER COMMENTS:

A sample Physician's/provider's written opinion can be found in [Physician's/Provider's Written Opinion Samples](#).

Individuals entered in this program are those who have the potential for exposure to blood and/or body fluids.

Current national guidelines regarding the post-exposure management and reporting requirements for exposure incidents involving Hepatitis B or HIV are detailed in References 2 and 4. Guidelines regarding the use of zidovudine post HIV exposure are in Reference 5. Occupational Health staff managing exposure incidents involving HIV should have reference 5 and 2 or 4 on hand as well as current recommendations issued by NMCPHC, the nearest NEPMU or the Infectious Disease Department at Navy MTFs.

Category II exposure includes persons performing tasks that involve no exposure to blood or body fluids or tissues, but whose employment may require performing unplanned Category I tasks. This category may include firefighters, police officers, ambulance and correctional workers. Hepatitis B vaccine is not generally recommended for these workers (Reference 6). Employees occupationally exposed on an average of one or more times per month to blood or other potentially infectious materials are recommended candidates for HBV series (reference 1).

The MMWR 7 Jun 96 details the chemoprophylaxis recommended to workers after occupational exposures associated with the highest risk for HIV transmission. Health care providers in the United States are encouraged to enroll workers who receive post-exposure prophylaxis (PEP) in the new HIV Post exposure Prophylaxis Registry, telephone (888) 737-4448 (888-737-4HIV). The data gathered will help shape future recommendations for managing occupational HIV exposures.

REFERENCES:

1. 29 CFR 1910.1030;
2. NIOSH Guidelines for prevention of transmission of human immunodeficiency virus and hepatitis B virus to health care and public safety workers, 1989, DHHS (NIOSH) Publication Number 89-107;
3. Lewy R. Organization and conduct of a hospital occupational health service, 1987, Occupational Medicine: State of the Art Reviews 2(3): 617-649.
4. MMWR Vol 38/S-6, Guidelines for prevention of transmission of human immunodeficiency virus and hepatitis B virus to health care and public-safety workers US Dept of HHS, Public Health Service, CDC, June 23 1989.
5. MMWR Vol 39/No.RR-1, Public Health Service Statement on Management of Occupational Exposure to Human Immunodeficiency Virus, Including Considerations Regarding Zidovudine Post exposure Use, US Dept of HHS, Public Health Service CDC, January 26, 1990.

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6. Update: Provisional Public Health Service Recommendations for Chemoprophylaxis after Occupational Exposure to HIV. MMWR, 7 Jun 96.
7. OASD Policy. Hepatitis B Immunization Policy for Department of Defense Medical and Dental Policy. 23 Oct 96.
8. Hepatitis C Information for Health Care Workers. In: Hepatitis Surveillance, Report No. 56. Centers for Disease Control and Prevention. April 1996.
9. DODI 6055.05-M, Table C2.T14, Bloodborne Pathogens

REVISED: SEPTEMBER 2009

BORON TRIFLUORIDE

122

STRESSOR(S) IN THIS PROGRAM:

boron trifluoride

NIOSH #
ED2275000

CAS #
7637-07-2
3 yrs

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	3 yrs	Yes
Major illness or injury	Yes	3 yrs	Yes
Hospitalization or surgery	Yes	3 yrs	Yes
Cancer	Yes	3 yrs	Yes
Back injury	Yes	3 yrs	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	3 yrs	Yes
Have you ever smoked	Yes	3 yrs	Yes
Do you currently smoke (packs/day)	Yes	3 yrs	Yes
Heart disease, high blood pressure, or stroke	Yes	3 yrs	Yes
Current medication use (prescription or OTC)	Yes	3 yrs	Yes
Medication allergies	Yes	3 yrs	Yes
Any reproductive health concerns	Yes	3 yrs	Yes
Skin disease	Yes	3 yrs	Yes
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	3 yrs	Yes
Work history of:			
Exposure to skin irritants	Yes	3 yrs	Yes
Comments on medical history:	Yes	3 yrs	Yes
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Spirometry:			
Spirometry (FEV1, FVC, FEV1/FVC)	Yes	No	Yes
Comments on laboratory results:	Yes	No	Yes
Physical examination:			
Vital signs	Yes	3 yrs	Yes
Special attention in examination to:			
Eyes	Yes	3 yrs	Yes
Mucous membranes	Yes	3 yrs	Yes
Respiratory system	Yes	3 yrs	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	3 yrs	Yes
Other appropriate examination (specify)	Yes	3 yrs	Yes
Comments on physical examination:	Yes	3 yrs	Yes
Is surveillance/PPE consistent with exposures	Yes	3 yrs	Yes
Are any abnormalities related to exposures/occupations	Yes	3 yrs	Yes

	EXAM ELEMENT	BASE	PERI	TERM
Recommendations:		Yes	3 yrs	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Acute pneumonitis has been associated with exposure to boron. Depending on exposure level, it can be immediately hazardous to life or health

REFERENCES:

1. CDC, NIOSH, IDHL 7637072 Aug 1, 1986
2. [NIOSH Pocket Guide to Chemical Hazards Boron Trifluoride, September 2005](#)
3. OSHA Safety and Health Topics: Boron Trifluoride 11/12/2004
4. [International Chemical Safety Cards BORON TRIFLUORIDE, 1994](#)
5. [ATSDR Toxicological Profile for Boron, Draft for Public Comment September 2007](#)
6. [NIOSH Occupational Safety and Health Guideline for Boron Trifluoride](#)

REVISED: SEPTEMBER 2009

1,3-BUTADIENE

217

STRESSOR(S) IN THIS PROGRAM:

1,3-butadiene

NIOSH #
EI9150000

CAS #
106-99-0
3 yrs

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	3 yrs	Yes
Major illness or injury	Yes	3 yrs	Yes
Hospitalization or surgery	Yes	3 yrs	Yes
Cancer	Yes	3 yrs	Yes
Back injury	Yes	3 yrs	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	3 yrs	Yes
Have you ever smoked	Yes	3 yrs	Yes
Do you currently smoke (packs/day)	Yes	3 yrs	Yes
Heart disease, high blood pressure, or stroke	Yes	3 yrs	Yes
Current medication use (prescription or OTC)	Yes	3 yrs	Yes
Medication allergies	Yes	3 yrs	Yes
Any reproductive health concerns	Yes	3 yrs	Yes
Blood diseases (anemia)	Yes	3 yrs	Yes
Allergies (asthma, hay fever, eczema)	Yes	3 yrs	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	3 yrs	Yes
Liver disease	Yes	3 yrs	Yes
Kidney disease	Yes	3 yrs	Yes
Current pregnancy (self or spouse)	Yes	3 yrs	Yes
Decreased immunity	Yes	3 yrs	Yes
Infertility or miscarriage (self or spouse)	Yes	3 yrs	Yes
Work history of:		3 yrs	
Exposure to benzene	Yes	3 yrs	Yes
Exposure to chemotherapeutic/antineoplastic agents	Yes	3 yrs	Yes
Exposure to ionizing radiation	Yes	3 yrs	Yes
Exposure to carcinogens	Yes	3 yrs	Yes
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	3 yrs	Yes
Family history of:		3 yrs	
Blood diseases (anemia)	Yes	3 yrs	Yes
Genetic disease (include children)	Yes	3 yrs	Yes
Cancers (leukemia, tumors)	Yes	3 yrs	Yes
Decreased immunity	Yes	3 yrs	Yes
Comments on medical history:	Yes	3 yrs	Yes
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV,	Yes	3 yrs	Yes

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EXAM ELEMENT	BASE	PERI	TERM
MCH, MCHC)			
Differential white blood cell count	Yes	3 yrs	Yes
Platelet count	Yes	3 yrs	Yes
Comments on laboratory results:	Yes	3 yrs	Yes
Physical examination:			
Vital signs	Yes	3 yrs	Yes
Special attention in examination to:			
Abdomen	Yes	3 yrs	Yes
Liver	Yes	3 yrs	Yes
Spleen	Yes	3 yrs	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	3 yrs	Yes
Immunocompetence (lymphatic system)	Yes	3 yrs	Yes
Other appropriate examination (specify)	Yes	3 yrs	Yes
Comments on physical examination:	Yes	3 yrs	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	3 yrs	Yes
Physician's/provider's written opinion required	Yes	3 yrs	Yes
Is surveillance/PPE consistent with exposures	Yes	3 yrs	Yes
Are any abnormalities related to exposures/occupations	Yes	3 yrs	Yes
Recommendations:	Yes	3 yrs	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

The following are the criteria for placement in this program:

Employees who are or maybe exposed to butadiene at concentrations at or above the action level (AL) on ≥ 30 days/yr, at or above the PEL [2ppm] ≥ 10 days/yr, or exposed to butadiene following an emergency situation (defined as any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of butadiene). Guidance on emergency examinations and referrals is contained in 29 CFR 1910.1051

Medical surveillance shall be continued for employees even after transfer to a job without butadiene exposure, whose work histories suggest exposure to butadiene: \geq PEL for ≥ 30 days/yr for ≥ 10 years, at or above the AL on ≥ 60 days/yr for ≥ 10 years, or > 10 ppm on 30 or more days in any past year.

See [Physician's/Provider's Written Opinion Samples](#) for sample Physician's/provider's Written Opinion.

REFERENCES:

1. 29 CFR 1910.1051
2. [NIOSH Occupational Safety and Health Guideline for Butadiene \(1,3-butadiene\)](#)
3. DODI 6055.05-M, T2.T5, 1,3-Butadiene

CADMIUM (CURRENT EXPOSURE)

124

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
cadmium (dust and salts)	EU9800000	7440-43-9
cadmium oxide	EV1925000	1306-19-0
cadmium sulfide	EV3150000	1306-23-6
cadmium sulfate	EV2700000	10124-36-4
cadmium nitrate	EV1750000	10325-94-7
cadmium fluoborate	EV0525000	14486-19-2
cadmium chloride	EV0175000	10108-64-2
carbonic acid, cadmium salt	FF9320000	513-78-0
Program Frequency		Variable

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:	Yes	**	Yes
Personal history of:	Yes	**	Yes
Is your work exposure history current (OPNAV 5100/15)	Yes	**	Yes
Major illness or injury	Yes	**	Yes
Hospitalization or surgery	Yes	**	Yes
Cancer	Yes	**	Yes
Back injury	Yes	**	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	**	Yes
Have you ever smoked	Yes	**	Yes
Do you currently smoke (packs/day)	Yes	**	Yes
How many years have or did you smoke?	Yes	**	Yes
None _____ number of years _____	Yes	**	Yes
Greatest number of packs per day smoked. _____	Yes	**	Yes
Former smokers - time since quitting: _____ years	Yes	**	Yes
Average packs per day smoked _____	Yes	**	Yes
Heart disease, high blood pressure, or stroke	Yes	**	Yes
Current medication use (prescription or OTC)	Yes	**	Yes
Medication allergies	Yes	**	Yes
Any reproductive health concerns	Yes	**	Yes
Abnormal pregnancy outcome during present employment	Yes	**	Yes
Blood diseases (anemia)	Yes	**	Yes
Lung/resp disease (ex: COPD, bronchitis, emphysema, asthma, pneumonitis)	Yes	**	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	**	Yes
Chest pain, angina, heart attack	Yes	**	Yes
Repeated episodes of loss of or near loss of consciousness	Yes	**	Yes
Coughing up blood (hemoptysis)	Yes	**	Yes
Shortness of breath	Yes	**	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Cough (dry or productive)	Yes	**	Yes
Liver disease	Yes	**	Yes
Diabetes	Yes	**	Yes
Injury with heavy bleeding in last year	Yes	**	Yes
Thyroid disease	Yes	**	Yes
Blood in stool	Yes	**	Yes
Seizures or fits	Yes	**	Yes
Kidney disease	Yes	**	Yes
Kidney stones	Yes	**	Yes
Problems with urination/blood in urine	Yes	**	Yes
Prostate gland problems	Yes	**	Yes
Protein in urine	Yes	**	Yes
Current pregnancy (self or spouse)	Yes	**	Yes
Impotence or sexual dysfunction	Yes	**	Yes
Bone problems (broken bones)	Yes	**	Yes
Musculoskeletal problems	Yes	**	Yes
Work history of:		**	
Exposure to cadmium (past, present & future)	Yes	**	Yes
Family history of:		**	
Cancers (leukemia, tumors)	Yes	**	Yes
Comments on medical history:	Yes	**	Yes
Laboratory:			
Serum chemistry:			
BUN and creatinine	Yes	**	Yes
Cadmium in blood (CdB)	Yes	**	Yes
Liver profile to include:			
AST , ALT, Total Bilirubin, alkaline phosphatase	Yes	**	Yes
Urinalysis:			
Routine:		**	Yes
Urinalysis without microscopic	Yes	**	Yes
Urine chemistry:			
cadmium in urine (CDU)	Yes	**	Yes
Beta-2-microglobulin (β_2 -m) in urine	Yes	**	Yes
Radiology:			
Chest x-ray (PA)	Yes	**	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	**	Yes
Other tests deemed appropriate by the physician	Yes	**	Yes
Comments on laboratory results:	Yes	**	Yes
Physical examination:			
Vital signs	Yes	**	Yes
Special attention in examination to:		**	
Kidney	Yes	**	Yes
Respiratory system	Yes	**	Yes
Prostate palpation or other at-least-as-effective	Yes	**	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Diagnostic test(s) for males over 40 years old		**	Yes
Other appropriate examination (specify)	Yes	**	Yes
Comments on physical examination:	Yes	**	Yes
Special notations:		**	
Substance(s) suspected human carcinogen	Yes	**	Yes
Physician's/provider's written opinion required	Yes	**	Yes
Is surveillance/PPE consistent with exposures	Yes	**	Yes
Are any abnormalities related to exposures/occupations	Yes	**	Yes
Recommendations:	Yes	**	Yes

Initial (preplacement) examinations shall be provided for all personnel who meet the criteria for inclusion in the cadmium medical surveillance program. An initial examination is NOT required if records show that the employee has been examined in accordance with the standard within the past 12 months. In that case, the records shall be maintained as part of the employee's medical record, and the prior examination treated as if it were the initial examination.

At termination of employment, a medical examination shall be provided that includes the elements of the medical examination listed, including a chest x-ray. However, if the last examination was less than six months prior to the termination date and satisfied these requirements, further examination is not needed unless the results of biological monitoring require further testing.

** See table below to determine frequency of examinations for current workers. OSHA regulations differ from NIOSH recommendations. More frequent exams may be triggered by the results of biological monitoring. Guidance on actions triggered by biological monitoring is detailed in 29 CFR 1910.1027. After the initial chest X-ray, the frequency of chest x-rays is determined by the examining physician, using the periodic spirometry results as a guide.

Biological Marker	Monitoring Result Category						
	A	B	C	D			
Cd _{urine}	≤ 3	> 3 and ≤ 7	> 7	> 7	>3		>3
	AND	AND/OR	OR	AND	AND		
β ₂ _{urine}	≤ 300	> 300 and ≤ 750	> 750		>750	>750	
	AND	AND/OR	OR			AND	AND
Cd _{blood}	≤ 5	> 5 and ≤ 10	> 10	>5		>5	>10

Cd = cadmium

Cd_{urine} = urine Cd, units in micrograms per gram (µg/g) of creatinine.

β₂_{urine} = urine beta-2 microglobulin, units in µg/g of creatinine

Cd_{blood} = blood Cd, units in µg/liter of whole blood.

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Required Actions	Monitoring Result Category			
	A	B	C	D
(1) Biological Monitoring				
a. Annual	X			
b. Semiannual		X		
c. Quarterly			X	X
(2) Medical Exam				
a. Biennial	X			
b Annual		X		
c. Semiannual			X	X
d. Within 90 days		X	X	
(3) Assess within 2 Weeks				
a. Excess Cd exposure		X	X	
b. Work practices		X	X	
c. Personal hygiene		X	X	
d. Respirator use		X	X	
e. Smoking history & current status		X	X	
f. Hygiene facilities		X	X	
g. Engineering controls		X	X	
(4) Correct deficiencies within 30 days		X	X	
(5) Discretionary medical removal		X	X	
(6) Written medical opinion		X	X	X*
(7) Mandatory medical removal				X

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* Required for return to work or permanent removal from occupational Cd exposure.

PROGRAM DESCRIPTION:

Currently exposed: all personnel who are or may be exposed to cadmium at or above the action level for 30 or more days per year.

Prior to assignment to a job requiring respirator use, a medical examination to determine fitness for respirator use shall be provided to any employee who does not have a medical examination within the preceding 12 months that satisfies the requirements outlined in 29 CFR 1910.1027. Place individuals on Program #716, Respirator User Certification Exam.

PROVIDER COMMENTS:

In accordance with 29 CFR 1910.1027(l)(1)(iii), the employer shall assure that all medical examinations and procedures required by this standard are performed **by or under the supervision of a licensed physician, who has read and is familiar with the health effects section of Appendix A**, the regulatory text of this section, the protocol for sample handling and laboratory selection in Appendix F, and the questionnaire of Appendix D.

The Physician's/provider's Written Opinion is required by the OSHA Standard. A sample is included in [Physician's/Provider's Written Opinion Samples](#).

REFERENCES:

1. [29 CFR 1910.1027](#)
2. [NIOSH Occupational Health Guideline for Cadmium Fume](#)
3. National Library of Medicine [Haz-Map Occupational Exposures to Hazardous Agents Cadmium and compounds](#)
4. DODI 6055.05-M, Table C2.T6, Cadmium

REVISED: NOVEMBER 2009

CADMIUM (PAST EXPOSURE)

206

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
cadmium (dust and salts)	EU9800000	7440-43-9
cadmium oxide (fume)	EV1930000	1306-19-0
cadmium oxide (production)	EV1925000	1306-19-0
cadmium sulfide	EV3150000	1306-23-6
cadmium sulfate	EV2700000	10124-36-4
cadmium nitrate	EV1750000	10325-94-7
cadmium fluoborate	EV0525000	14486-19-2
cadmium chloride	EV0175000	10108-64-2
cadmium carbonate	FF9320000	513-78-0
	Program Frequency	Variable

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	**	Yes
Major illness or injury	Yes	**	Yes
Hospitalization or surgery	Yes	**	Yes
Cancer	Yes	**	Yes
Back injury	Yes	**	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	**	Yes
Have you ever smoked	Yes	**	Yes
Do you currently smoke (packs/day)	Yes	**	Yes
How many years have or did you smoke?	Yes	**	Yes
None _____ number of years _____	Yes	**	Yes
Greatest number of packs per day smoked. _____	Yes	**	Yes
Former smokers - time since quitting: _____years	Yes	**	Yes
Average packs per day smoked _____	Yes	**	Yes
Heart disease, high blood pressure, or stroke	Yes	**	Yes
Current medication use (prescription or OTC)	Yes	**	Yes
Medication allergies	Yes	**	Yes
Any reproductive health concerns	Yes	**	Yes
Abnormal pregnancy outcome during present employment	Yes	**	Yes
Blood diseases (anemia)	Yes	**	Yes
Lung/resp disease (ex: COPD, bronchitis, emphysema, asthma, pneumonitis)	Yes	**	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	**	Yes
Chest pain, angina, heart attack	Yes	**	Yes
Repeated episodes of loss of or near loss of consciousness	Yes	**	Yes
Coughing up blood (hemoptysis)	Yes	**	Yes

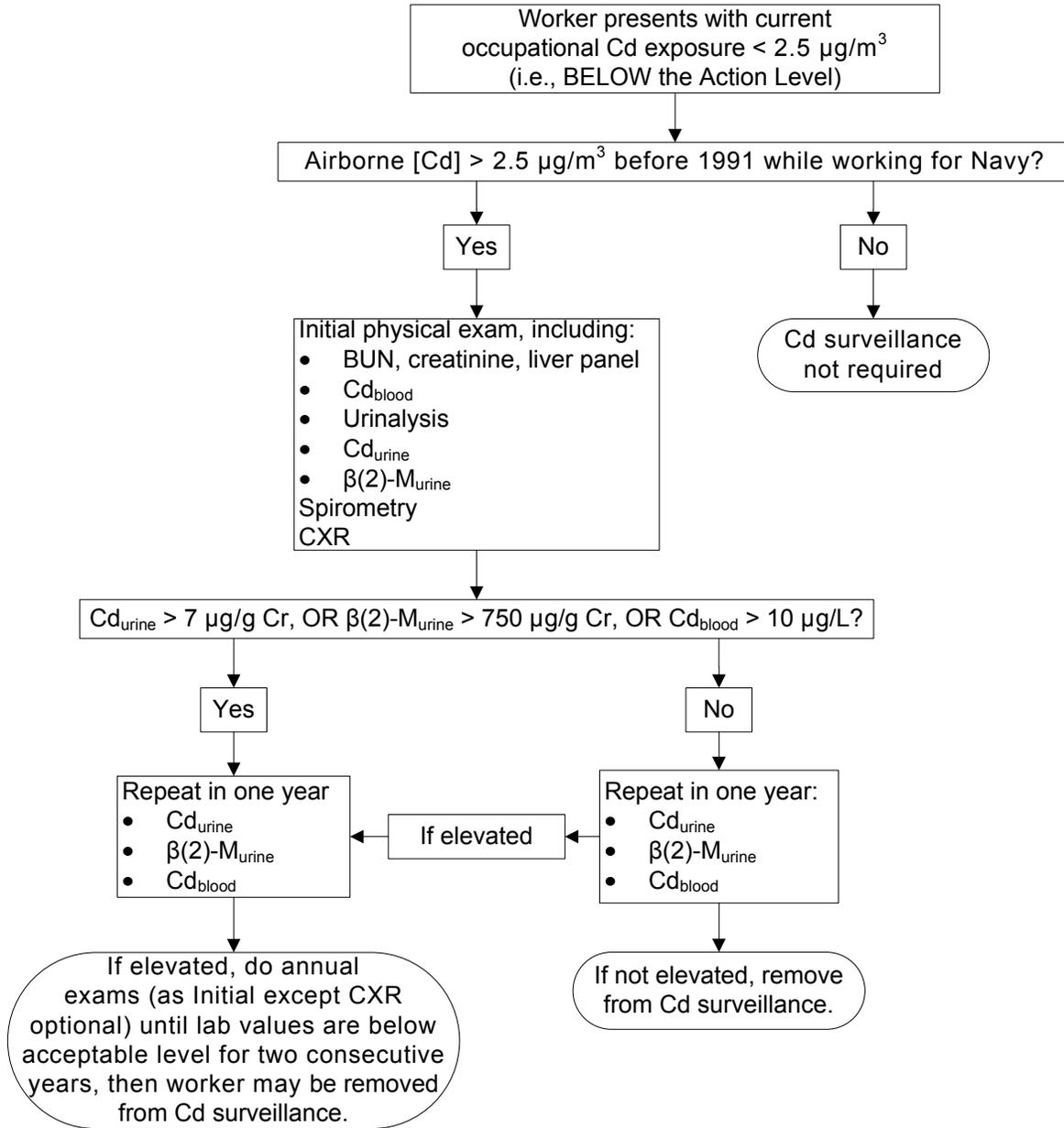
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EXAM ELEMENT	BASE	PERI	TERM
Shortness of breath	Yes	**	Yes
Cough (dry or productive)	Yes	**	Yes
Liver disease	Yes	**	Yes
Diabetes	Yes	**	Yes
Injury with heavy bleeding in last year	Yes	**	Yes
Thyroid disease	Yes	**	Yes
Blood in stool	Yes	**	Yes
Seizures or fits	Yes	**	Yes
Kidney disease	Yes	**	Yes
Kidney stones	Yes	**	Yes
Problems with urination/blood in urine	Yes	**	Yes
Prostate gland problems	Yes	**	Yes
Protein or sugar in urine	Yes	**	Yes
Current pregnancy (self or spouse)	Yes	**	Yes
Impotence or sexual dysfunction	Yes	**	Yes
Bone problems (broken bones)	Yes	**	Yes
Musculoskeletal problems	Yes	**	Yes
Work history of:			Yes
Exposure to cadmium	Yes	**	Yes
Family history of:			Yes
Cancers (leukemia, tumors)	Yes	**	Yes
Comments on medical history:	Yes	**	Yes
Laboratory:			
Serum chemistry:			
BUN and creatinine	Yes	**	Yes
Cadmium in blood (CdB)	Yes	**	Yes
Liver profile to include:			
AST , ALT, Total Bilirubin, alkaline phosphatase	Yes	**	Yes
Urinalysis:			
Routine:			
Urinalysis without microscopic	Yes	**	Yes
Cadmium in urine (CdU)	Yes	**	Yes
Beta-2-microglobulin (β_2 -m) in urine	Yes	**	Yes
Radiology:			
Chest x-ray (PA)	Yes	**	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	**	Yes
Other tests deemed appropriate by the physician	Yes	**	Yes
Comments on laboratory results:	Yes	**	Yes
Physical examination:			
Vital signs	Yes	**	Yes
Special attention in examination to:			
Respiratory system	Yes	**	Yes
Prostate palpation or other at-least-as-effective	Yes	**	Yes
Diagnostic test(s) for males over 40 years old	Yes	**	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Other appropriate examination (specify)	Yes	**	Yes
Comments on physical examination:	Yes	**	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	**	Yes
Physician's/provider's written opinion required	Yes	**	Yes
Is surveillance/PPE consistent with exposures	Yes	**	Yes
Are any abnormalities related to exposures/occupations	Yes	**	Yes
Recommendations:	Yes	**	Yes

PROGRAM DESCRIPTION:



** See above algorithm to determine frequency of examinations for past workers. Guidance on actions triggered by biological monitoring is detailed in 29 CFR 1910.1027. After the initial chest X-ray, the frequency of chest x-rays is determined by the examining physician, using the periodic spirometry results as a guide.

PROVIDER COMMENTS:

1. In accordance with 29 CFR **1910.1027(I)(1)(iii)**, the employer shall assure that all medical examinations and procedures required by this standard are performed by or under the supervision of a licensed physician, who has read and is familiar with the health effects section of Appendix A, the regulatory text of this section, the protocol for sample

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handling and laboratory selection in Appendix F, and the questionnaire of Appendix D. These examinations and procedures shall be provided without cost to the employee and at a time and place that is reasonable and convenient to employees.

2. OSHA requires a Physician's/provider's Written Opinion. A sample is included in Physician's/Provider's Written Opinion Samples.
3. Previously exposed - The employer shall institute a medical surveillance program for all employees who prior to the effective date of section **1910.1027(I)(1)(i)(B)** might previously have been exposed to cadmium at or above the action level by the employer, unless the employer demonstrates that the employee did not prior to the effective date of this section work for the employer in jobs with exposure to cadmium for an aggregated total of more than 60 months.

REFERENCES:

1. [29 CFR 1910.1027](#)
2. [OSHA Standards Enforcement Letter, dated 10/19/1994 - Medical surveillance provision of the Cadmium standard for previously exposed employees.](#)
3. NAVENVIRHLTHCEN letter 6260 Ser 3213/6538 of 4 Jan 1993.
4. [NIOSH Occupational Health Guideline for Cadmium Fume](#)

REVISED: JANUARY 2010

CARBON BLACK

125

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
carbon black	FF5800000	1333-86-4
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Work history of:			
Exposure to dusts (coal, blast, Grit, sand, nuisance)	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Exposure to carcinogens	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Carbon black itself is not considered carcinogenic. However, solvent extracts of carbon black may contain carcinogens.

REFERENCES:

[NIOSH Occupational Safety and Health Guideline for Carbon Black](#)

REVISED: AUGUST 2008

CARBON DISULFIDE

126

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
carbon disulfide	FF6650000	75-15-0
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Use of nitrate medication (nitroglycerine)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Tremors	Yes	Annual	No
Change or loss of vision	Yes	Annual	No
Eye irritation	Yes	Annual	No
Glaucoma	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No
Infertility or miscarriage (self or spouse)	Yes	Annual	No
Epilepsy (seizure disorder)	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Mental/emotional illness	Yes	Annual	No
Depression, diff concentrating, excessive anxiety	Yes	Annual	No
Personality change	Yes	Annual	No
Family history of:			
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Liver profile to include:			
AST , ALT, Total Bilirubin, alkaline phosphatase	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Cardiology:			
Electrocardiogram	Yes	Annual	No
Optometry:			
Vision screen (visual acuity)	Yes	Annual	No
Visual fields	Yes	Annual	No
Comments on laboratory results:			
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Eyes	Yes	Annual	No
Kidney	Yes	Annual	No
Liver	Yes	Annual	No
Skin	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards, current edition; Agency for Toxic Substances and Disease Registry \(ATSDR\) Carbon Disulfide](#)
2. [NIOSH Occupational Health Guideline for Carbon Disulfide](#)

REVIEWED: NOVEMBER 2009

CARBON MONOXIDE

127

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
carbon monoxide		FG3500000	630-08-0	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Have you ever had personal history of:				
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Blood diseases (anemia, hemoglobinopathy)	Yes	Annual	No	
Use of nitrate medication (nitroglycerine)	Yes	Annual	No	
Do you have current, recent or frequent symptoms of:	Yes	Annual	No	
Headache, dizziness, light-headedness, weakness	Yes	Annual	No	
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	No	
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No	
Change or loss of vision	Yes	Annual	No	
Loss or abrupt change in hearing	Yes	Annual	No	
Chest pain, angina, heart attack	Yes	Annual	No	
Shortness of breath	Yes	Annual	No	
Heart palpitations	Yes	Annual	No	
Epilepsy (seizure disorder)	Yes	Annual	No	
Problems with balance and coordination	Yes	Annual	No	
Muscle cramping	Yes	Annual	No	
Family history of:				
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Chronic anemia or hemoglobinopathy	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Hematology:				
Complete blood count without differential	Yes	Annual	No	
Other testing				

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EXAM ELEMENT	BASE	PERI	TERM
Cardiology:			
Electrocardiogram	Yes	No	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Respiratory system	Yes	Annual	No
Eyes (fundoscopic exam)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/pep consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

Workers are typically included in the surveillance program when they are expected to be exposed to carbon monoxide levels beyond published exposure limits. Exposure limits for employees are as follows:

NIOSH REL: TWA 35 ppm (40 mg/m³) Ceiling 200 ppm (229 mg/m³)

OSHA PEL: TWA 50 ppm (55 mg/m³) IDLH 1200 ppm

PROVIDER COMMENTS:

Baseline EKG is performed for later comparison when cardiac ischemia, secondary to carbon monoxide exposure, is suspected. Baseline CBC is performed to identify those workers with an underlying anemia or hemoglobinopathy. People with decreased hemoglobin oxygen carrying capacity will exhibit earlier and greater effects from carbon monoxide exposure that results in carboxyhemoglobinemia.

REFERENCES:

1. [NIOSH Occupational Health Guideline for Carbon Monoxide](#)
2. Roy A.M. Myers, Antoinette DeFazio, and Mark P. Kelly. Chronic Carbon Monoxide Exposure: A Clinical Syndrome Detected by Neuropsychological Tests. Journal Of Clinical Psychology, Vol. 54(5), 555–567 (1998)
3. Chapman, JT. Carbon Monoxide Poisoning. American College of Physicians, Physician Information and Education Resource 2008.
4. Van Meter, KW. Carbon monoxide poisoning. Emergency Medicine: A Comprehensive Study Guide 6th edition. Chapter 203

PROGRAM REVIEWED: FEBRUARY 2010

CARBON TETRACHLORIDE

128

STRESSOR(S) IN THIS PROGRAM:

NIOSH #
FG4900000

CAS #
56-23-5
3 yrs

carbon tetrachloride

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	3 yrs	Yes
Major illness or injury	Yes	3 yrs	Yes
Hospitalization or surgery	Yes	3 yrs	Yes
Cancer	Yes	3 yrs	Yes
Back injury	Yes	3 yrs	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	3 yrs	Yes
Have you ever smoked	Yes	3 yrs	Yes
Do you currently smoke (packs/day)	Yes	3 yrs	Yes
Heart disease, high blood pressure, or stroke	Yes	3 yrs	Yes
Current medication use (prescription or OTC)	Yes	3 yrs	Yes
Medication allergies	Yes	3 yrs	Yes
Any reproductive health concerns	Yes	3 yrs	Yes
Allergies (asthma, hay fever, eczema)	Yes	3 yrs	Yes
Skin disease	Yes	3 yrs	Yes
Hepatitis or jaundice	Yes	3 yrs	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	3 yrs	Yes
Use of barbiturates	Yes	3 yrs	Yes
Headache, dizziness, light-headedness, weakness	Yes	3 yrs	Yes
Nausea or vomiting	Yes	3 yrs	Yes
Eye irritation	Yes	3 yrs	Yes
Liver disease	Yes	3 yrs	Yes
Kidney disease	Yes	3 yrs	Yes
Work history of:			
Exposure to skin irritants	Yes	3 yrs	Yes
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	3 yrs	Yes
Family history of:		3 yrs	
Cancers (leukemia, tumors)	Yes	3 yrs	Yes
Comments on medical history:	Yes	3 yrs	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST, ALT, total Bilirubin, alkaline phos.	Yes	3 yrs	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	3 yrs	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	3 yrs	Yes
Physical examination:			
Vital signs	Yes	3 yrs	Yes
Special attention in examination to:			
Central nervous system	Yes	3 yrs	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	3 yrs	Yes
Eyes	Yes	3 yrs	Yes
Liver	Yes	3 yrs	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	3 yrs	Yes
Other appropriate examination (specify)	Yes	3 yrs	Yes
Comments on physical examination:	Yes	3 yrs	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	3 yrs	Yes
Is surveillance/PPE consistent with exposures	Yes	3 yrs	Yes
Are any abnormalities related to exposures/occupations	Yes	3 yrs	Yes
Recommendations:	Yes	3 yrs	Yes

PROGRAM DESCRIPTION:

REFERENCES:

[NIOSH Occupational Safety and Health Guideline for Carbon Tetrachloride](#)

REVISED: January 2010

CHLOROFORM

130

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
chloroform	FS9100000	67-66-3	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Treatment with steroids or cytotoxic (drugs)	Yes	Annual	Yes
Use of barbiturates	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Nausea or vomiting	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with numbness, tingling, weakness	Yes	Annual	Yes
In hands or feet			
Migraine headache	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , ALT, total bilirubin, alkaline phosphatase	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Cardiology:			
Electrocardiogram	Yes	No	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Cardiovascular system	Yes	Annual	Yes
Abdomen	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Safety and Health Topic: Chloroform](#)
2. [OSHA Safety and Health Guideline for Chloroform, 1992](#)
3. [National Institute of Environmental Health \(NIEH\), Chloroform](#)
4. [ATSDR ToxFAQs—Chloroform, September 1997](#)
5. [EPA Air Toxics Hazard Summary: Chloroform, January 2000](#)

REVISED: NOVEMBER 2009

BIS-CHLOROMETHYL ETHER

131

STRESSOR(S) IN THIS PROGRAM:

bis chloromethyl ether

NIOSH #
KN1575000

CAS #
542-88-1
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Coughing up blood (hemoptysis)	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify):	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. OSHA Standard 29 CFR 1910.1003
2. 29 CFR 1926.1103
3. [NIOSH Pocket Guidance for bis-Chloromethyl ether](#)
4. Former standard 29 CFR 1910.1008.

REVIEWED: FEBRUARY 2008

BETA-CHLOROPRENE

132

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
beta-chloroprene	EI9625000	126-99-8
Program Frequency		3 years

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	3 yrs	Yes
Major illness or injury	Yes	3 yrs	Yes
Hospitalization or surgery	Yes	3 yrs	Yes
Cancer	Yes	3 yrs	Yes
Back injury	Yes	3 yrs	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	3 yrs	Yes
Have you ever smoked	Yes	3 yrs	Yes
Do you currently smoke (packs/day)	Yes	3 yrs	Yes
Heart disease, high blood pressure, or stroke	Yes	3 yrs	Yes
Current medication use (prescription or OTC)	Yes	3 yrs	Yes
Medication allergies	Yes	3 yrs	Yes
Any reproductive health concerns	Yes	3 yrs	Yes
Allergies (asthma, hay fever, eczema)	Yes	3 yrs	Yes
Skin disease	Yes	3 yrs	Yes
Hepatitis or jaundice	Yes	3 yrs	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	3 yrs	Yes
Eye irritation	Yes	3 yrs	Yes
Liver disease	Yes	3 yrs	Yes
Kidney disease	Yes	3 yrs	Yes
Current pregnancy (self or spouse)	Yes	3 yrs	Yes
Infertility or miscarriage (self or spouse)	Yes	3 yrs	Yes
Problems with numbness, tingling, weakness	Yes	3 yrs	Yes
In hands or feet		3 yrs	
Migraine headache	Yes	3 yrs	Yes
Depression, diff concentrating, excessive anxiety	Yes	3 yrs	Yes
Work history of:		3 yrs	
Exposure to skin irritants	Yes	3 yrs	Yes
Exposure to respiratory irritants	Yes	3 yrs	Yes
Comments on medical history:	Yes	3 yrs	Yes
Physical examination:			
Vital signs	Yes	3 yrs	Yes
Special attention in examination to:			
Central nervous system	Yes	3 yrs	Yes
Cardiovascular system	Yes	3 yrs	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Liver	Yes	3 yrs	Yes
Respiratory system	Yes	3 yrs	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	3 yrs	Yes
Other appropriate examination (specify)	Yes	3 yrs	Yes
Comments on physical examination:	Yes	3 yrs	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	3 yrs	Yes
Substance(s) suspected human mutagenic/fetotoxic effects.	Yes	3 yrs	Yes
Is surveillance/PPE consistent with exposures	Yes	3 yrs	Yes
Are any abnormalities related to exposures/occupations	Yes	3 yrs	Yes
Recommendations:	Yes	3 yrs	Yes

PROGRAM DESCRIPTION:

Program recommendations from NIOSH have changed significantly from the original 1978 version. Previous version had recommendation for CXR, CBC, urinalysis, liver enzymes, and the program periodic exams were annual.

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards beta-Chloroprene](#)
2. [OSHA Safety and Health Guideline for beta-Chloroprene, 2007](#)

REVISED: NOVEMBER 2009

CHROMIC ACID/CHROMIUM (VI)

133

STRESSOR(S) IN THIS PROGRAM:

	NIOSH #	CAS #
chromic acid	GB2450000	7738-94-
chromic acid, zinc salt	GB3290000	13530-65-9
dichromic acid, disodium salt	HX7700000	10588-01-9
chromium (vi) water soluble	GB4200000	7440-47-3
chromium (vi) water insoluble	GB4200000	7440-47-3
chromic acid, lead (+2) salt (1:1)	GB2975000	7758-97-6
chromic acid, di-t-butylester	GB2900000	1189-85-1
chromic acid, disodium salt	GB2955000	7775-11-3
chromic acid, dipotassium salt	GB2940000	7789-00-6
chromium phosphate	GB6840000	7789-04-
chromium carbonyl	GB5075000	13007-92-6
chromic acid, zinc hydroxide hydrate (1:2, 2:1)	GB3260000	15930-94-6
chromium (vi) oxide (1:3)	GB6650000	1333-82-0
chromic acid, strontium salt (1:1)	GB3240000	7789-06-2
chromic acid, calcium salt (1:1)	GB2750000	13765-19-0
barium chromate (vi)	CQ8760000	10294-40-3
c.i. pigment yellow	GB3300000	37300-23-5
chromium chromate	GB2850000	24613-89-6

See [Chemical Stressors List](#) for additional compounds

Program Frequency

Annual

EXAM ELEMENT

Medical history: have you ever had:

Personal history of:

Is your work exposure history current (OPNAV 5100/15)

Major illness or injury

Hospitalization or surgery

Cancer

Back injury

Do you drink 6 or more drinks per week (beer, wine, liquor)

Have you ever smoked

Do you currently smoke (packs/day)

Heart disease, high blood pressure, or stroke

Current medication use (prescription or OTC)

Medication allergies

Any reproductive health concerns

Allergies (asthma, hay fever, eczema)

Skin disease

Lung/resp disease (ex: COPD, bronchitis, pneumonitis)

Treatment with steroids or cancer (cytotoxic) drugs

BASE PERI TERM

Yes Annual Yes

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EXAM ELEMENT	BASE	PERI	TERM
Perforation of nasal septum	Yes	Annual	Yes
Coughing up blood (hemoptysis)	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Work history of:			
Exposure to dusts (coal, blast, grit, sand, nuisance)	Yes	Annual	Yes
Exposure to chromium or chromic acid	Yes	Annual	Yes
Exposure to skin irritants	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Differential white blood cell count	Yes	Annual	Yes
Serum chemistry:			
Liver profile to include:			
AST, ALT , Total Bilirubin, alkaline phosphatase	Yes	Annual	Yes
BUN and creatinine	Yes	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	Annual	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Mucous membranes	Yes	Annual	Yes
Nasal mucosa (septal perforation)	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

REFERENCES:

1. [OSHA STANDARD 29 CFR 1910, 1915, 1917, 1918, 1926 \(Occupational exposure to hexavalent chromium\), final rule effective 30 May 2006](#)
2. [NIOSH Occupational Health Guideline for Chromic Acid and Chromates](#)
3. DoDI 6055.05-M, Table C2.T7, Chromium

REVISED: DECEMBER 2009

COAL TAR PITCH VOLATILES/POLYCYCLIC AROMATIC HYDROCARBONS

134

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
coal tars (coal tar	GF8600000	8007-45-2
coal tar extracts and high temperature tars	GF8600100	65996-89-6
coal tar pitch volatiles	GF8655000	65996-93-2

See [Chemical Stressors List](#) for additional compounds

Program Frequency Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer(cytotoxic) drugs	Yes	Annual	Yes
Coughing up blood (hemoptysis)	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Pneumonia	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Exposure to respiratory irritants	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Urinalysis:			

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EXAM ELEMENT	BASE	PERI	TERM
Routine			
Urinalysis with microscopic	Yes	Annual	Yes
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Differential white blood cell count	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Weight	Yes	Annual	Yes
Special attention in examination to:			
Mucous membranes	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. [29 CFR 1910.1002](#)—Coal tar pitch volatiles; interpretation of term.
2. [29 CFR 1910.1029](#)
3. NOTE: 29 CFR 1910.1029 applies to workers exposed to coke oven emissions and has specific requirements which must be followed in addition to those listed above. These include sputum and urine cytology and spirometry. To the extent that a worker's exposure to PAH resembles that of coke oven emissions, these additional elements must be considered. While sputum cytology is not of proven benefit, urine cytology has been shown in certain high risk groups to identify asymptomatic cancers. Reference (4) provides more elaborate discussion of the issues.
4. [NIOSH Occupational Health Guideline for Coal Tar Pitch Volatiles](#)
5. Polycyclic Aromatic Hydrocarbons, Fifth Annual Report on Carcinogens, Summary 1989, U.S. Department of Health and Human Services Public Health Service, Rockville, MD, Technical Resources, Inc. 1989:242-246.
6. Journal of Occupational Medicine 1990 (32): Entire Issue.

REVISED: DECEMBER 2009

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COBALT

208

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
cobalt (metal fume and dust)	GF8750000	7440-48-4
cobalt (II) oxide	GG2800000	1307-96-6
cobalt (II) sulfide	GG3325000	1317-42-6
cobalt (II) chloride	GG9800000	7646-39-9
cemented tungsten carbide (see #200 for stressors)		

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Work history of:			
Exposure to skin irritants			
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	Annual	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Cardiovascular system	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	No
Other appropriate examination (specify):	Yes	Annual	No
Comments on physical examination	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Cobalt, September 2005](#)
2. [OSHA Chemical Sampling Information for Cobalt, March 2007](#)
3. [OSHA Occupational Safety and Health Guideline for Cobalt Metal, Dust, and Fume \(as Co\)](#)
4. [ATSDR ToxFAQs—Cobalt, April 2004](#)
5. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Cobalt, 1981](#)

REVISED: DECEMBER 2009

CRESOL

135

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
cresol (o, m, p-mixture)	GO5950000	1319-77-3
m-cresol	GO6125000	108-39-4
o-cresol	GO6300000	95-48-7
p-cresol	GO6475000	106-44-5
2,6-ditert-butyl-p-cresol	GO7875000	128-37-0
4,4'-thiobis(6-tert-butyl-m-cresol)	GP3150000	96-69-5
	Program Frequency	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Hepatitis or jaundice	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Coughing up blood (hemoptysis)	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Liver disease	Yes	Annual	No
Kidney disease	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No
BUN and creatinine	Yes	Annual	No
AST	*	Annual	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	No
Radiology:			
Chest x-ray (PA)	Yes	No	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Liver	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Cresols, September 2005](#)
2. [OSHA Safety and Health Guideline for Phenol and Cresol, 2008](#)
3. [ATSDR ToxFAQs—Cresol, November 2008](#)
4. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Cresol, 1978](#)
5. [EPA Air Toxics Hazard Summary: Cresol, January 2000](#)

REVISED: SEPTEMBER 2009

1,2-DIBROMO-3-CHLOROPROPANE (DBCP)

137

STRESSOR(S) IN THIS PROGRAM:

1,2-dibromo-3-chloropropane

NIOSH #
TX8750000

CAS #
96-12-8
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Blood diseases (anemia)	Yes	Annual	Yes
Skin diseases	Yes	Annual	Yes
Lung/resp disease	Yes	Annual	Yes
Mucosal irritation	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Problems with balance and coordination	Yes	Annual	Yes
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Serum total estrogen (female)	Yes	Annual	Yes
Serum follicle stimulating hormone (FSH)	Yes	Annual	Yes
Serum luteinizing hormone (LH)	Yes	Annual	Yes
Additional lab tests:			
Sperm count (male)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
CNS	Yes	Annual	Yes
HEENT	Yes	Annual	Yes
Mucous membranes	Yes	Annual	Yes
Respiratory	Yes	Annual	Yes
GU (including testicle size)	Yes	Annual	Yes
Body habitus	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Use of 1,2-dibromo-3-chloropropane (DBCP) as a fumigant in the U.S. has been banned by the EPA. Limited manufacturing may still be occurring.

Medical surveillance is to be made available in regulated areas and to workers exposed to DBCP in emergency situations. The OSHA standard on DBCP does not apply to: 1) exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or 2) the storage, transportation, distribution, or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquids.

All medical examinations and procedures shall be performed by or under the supervision of a licensed physician.

Per 29 CFR 1910.1044, following exposure in an emergency situation the employer shall provide the employee with a sperm count test as soon as practicable, or, if the employee has a history of vasectomy or is unable to produce a semen specimen, the hormone tests contained in paragraph (m)(2)(iii) of this section. The employer shall provide these same tests at a **three** month follow-up.

In addition, if the employee for any reason develops signs or symptoms commonly associated with exposure to DBCP, the employer shall provide the employee with a medical examination which shall include those elements considered appropriate by the examining physician, in accordance with paragraph 1910.1044(m)(3).

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.1044](#)
2. [29 CFR 1926.1144](#) 1,2-dibromo-3-chloropropane.
3. [HAZ-MAP at National Library of Medicine](#)
4. [ATSDR ToxFAQs 1,2-Dibromo-3-Chloropropane](#), 1995

REVISED: JANUARY 2009

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3,3'-DICHLOROBENZIDINE

138

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
3,3'-dichlorobenzidine	DD0525000	91-94-1
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	Yes
Genitourinary tract	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.1003](#)
2. [29 CFR 1926.1103](#)
3. Former standard 29 CFR 1910.1007. [HAZ-MAP at National Library of Medicine \(http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=277\)](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=277)
4. [ATDSR ToxFAQs -3,3'-Dichlorobenzidine, June 1999](#)

REVIEWED: FEBRUARY 2009

4-DIMETHYLAMINOAZOBENZENE

139

STRESSOR(S) IN THIS PROGRAM:

4-dimethylaminoazobenzene

NIOSH #
BX7350000

CAS #
60-11-7
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.1003](#)
2. 29 CFR 1926.1103
3. Former standard 29 CFR 1910.1015.
4. [HAZ-MAP at National Library of Medicine \(http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=282\)](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=282)

REVIEWED: OCTOBER 2008

DINITRO-ORTHO-CRESOL

140

STRESSOR(S) IN THIS PROGRAM:
 dinitro-o-cresol
Program Frequency
NIOSH # GO9625000
CAS # 534-52-1
 Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	Annual	No
Use of nitrate medication (nitroglycerine)	Yes	Annual	No
Weight loss	Yes	Annual	No
Glaucoma	Yes	Annual	No
Liver disease	Yes	Annual	No
Kidney disease	Yes	Annual	No
Thyroid disease (heat or cold intolerance)	Yes	Annual	No
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	No
Work history of:			
Exposure to dusts (coal, blast grit, sand, nuisance)	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			

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EXAM ELEMENT	BASE	PERI	TERM
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Eyes	Yes	Annual	No
Abdomen	Yes	Annual	No
Liver	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Thyroid	Yes	Annual	No
Metabolic disturbance (fever, tachycardia)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

72 hour observation by medical attendants required in all cases of splashes, spills or leaks where significant skin or eye contact with or inhalation of materials occurs. Weekly sampling and analysis of workers blood for DNOC content required during period of expected exposure in the following agriculturally related occupations: mixers, loaders, ground and aerial applicators, and flaggers.

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard. Occupational Safety and Health Guideline for Dinitro-ortho-cresol](#)
2. [NIOSH Pocket Guide, Dinitro-ortho-cresol September 2005](#)
3. Hayes WJ, Pesticides Studied in Man, Baltimore: Williams and Wilkins; 1982:466-470.
4. [HAZ-MAP at National Library of Medicine,](#)

REVIEWED: SEPTEMBER 2009

DIOXANE

141

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
dioxane	JG8225000	123-91-1	
Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)			
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Hepatitis or jaundice	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Coughing up blood (hemoptysis)	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Liver disease	Yes	Annual	No
Kidney disease	Yes	Annual	No
Work history of:			
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Annual	No
BUN and creatinine	Yes	Annual	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Liver	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Mucous membranes	Yes	Annual	No
Nasal mucosa	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS: Nares exam is recommended in NIOSH std.

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard. Occupational Exposure to Dioxane,](#)
2. [HAZ-MAP at National Library of Medicine \(http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=408\)](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=408)

REVIEWED: JUNE 2008

EPICHLOROHYDRIN

142

STRESSOR(S) IN THIS PROGRAM:

epichlorohydrin

NIOSH #
TX4900000

CAS #
106-89-8
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Exposure to respiratory irritants	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	Yes
BUN and creatinine	Yes	Annual	Yes
AST	*	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	No	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Eyes	Yes	Annual	Yes
Kidneys	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Mucous membranes	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard.](#)
2. [Occupational exposure to Epichlorohydrin, DHHS Pub. No. 76-206](#)
3. [NIOSH Current Intelligence Bulletin #30: Epichlorohydrin](#)
4. [HAZ-MAP at National Library of Medicine \(http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=358\)](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=358)

REVIEWED: JUNE 2008

ETHOXY AND METHOXY ETHANOL

143

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
2-ethoxyethanol	K8050000	110-80-5
2-methoxyethanol	KL5775000	109-86-4
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Blood diseases (anemia)	Yes	Annual	No
Skin disease	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Kidney disease	Yes	Annual	No
Current pregnancy (self or spouse)	Yes	Annual	No
Infertility or miscarriage (self or spouse)	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Depression, diff concentrating, excessive anxiety	Yes	Annual	No
Work history of:			
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No
Family history of:			
Blood diseases (anemia)	Yes	Annual	No
Genetic disease (including children)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Annual	Yes
BUN and creatinine	Yes	Annual	Yes
Hematology:			

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EXAM ELEMENT	BASE	PERI	TERM
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Genitourinary tract	Yes	Annual	No
Testes (male)	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Special notations:			
Substance(s) known mutagenic or fetotoxic effects	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. The Glycol Ethers, with Particular Reference to 2-Methoxyethanol and 2-Ethoxyethanol: Evidence of Adverse Reproductive Effects, NIOSH [Current Intelligence Bulletin 39](http://www.cdc.gov/niosh/83112_39.html) (http://www.cdc.gov/niosh/83112_39.html), (NIOSH) Pub. No. 83-112.
2. [HAZ-MAP 2-Ethoxyethanol](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=131) (http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=131)
3. [HAZ-MAP 2-Methoxyethanol](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=133) (http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=133)
4. [HAZ-MAP Glycol Ethers](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=688) (http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=688)

REVIEWED: JUNE 2008

ETHYLENE DIBROMIDE

145

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
ethylene dibromide	KH9275000	106-93-4
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Blood diseases (anemia)	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Exposure to respiratory irritants	Yes	Annual	Yes
Family history of:			
Blood diseases (anemia)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
BUN and creatinine	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Cardiovascular system	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Kidney	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Substance(s) known mutagenic or fetotoxic effects	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard Occupational exposure to Ethylene Dibromide, NIOSH Pub. No. 77-221](#)
2. [HAZMAP Ethylene Dibromide](#)
3. [EXTOXNET Ethylene Dibromide](#)
4. [Medical Management Guidelines \(ATSDR\) Ethylene Dibromide.](#)

REVIEWED: SEPTEMBER 2009

ETHYLENE DICHLORIDE

146

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
ethylene dichloride	KI0525000	107-06-2
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Weight loss	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Exposure to respiratory irritants	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Differential white blood cell count	Yes	Annual	Yes
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	Yes

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EXAM ELEMENT	BASE	PERI	TERM
BUN and creatinine	Yes	Annual	Yes
AST	*	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Eyes	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Ethylene dichloride is a central nervous system depressant and causes injury to the liver and kidneys. Animal studies indicate that it has little ability to adversely affect the reproductive or developmental processes except at maternally toxic levels.

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard Occupational exposure to Ethylene Dichloride, NIOSH Pub. No. 78-211, September 1978](#)
2. [HAZMAP – Ethylene Dichloride](#)

REVISED: SEPTEMBER 2009

ETHYLENE OXIDE

148

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
ethylene oxide	KX2450000	75-21-8
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Blood diseases (anemia)	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Problems with balance, numbness, and tingling in hands or feet	Yes	Annual	Yes
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes
Exposure to anesthetic gases	Yes	Annual	Yes
Exposure to skin irritants	Yes	Annual	Yes
Family history of:			
Blood diseases (anemia)	Yes	Annual	Yes
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes

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Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Genitourinary tract	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Substance(s) suspected human mutagenic/fetotoxic effects	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Refer to 29 CFR 1910.1047 for exams required following acute exposure or for exams with positive findings.

OSHA Standard requires a Physician's/provider's Written Opinion (PWO). A sample PWO can be found in [Physician's/Provider's Written Opinion Samples](#) of the Medical Matrix and [29 CFR 1910.1047, CFR Appendix C](#) (http://www.OSHA.gov/pls/OSHAweb/owadisp.show_document?p_table=STANDARD S&p_id=10073).

The examining physician if requested by the employee and deemed appropriate by the physician may order pregnancy tests or laboratory evaluation of fertility. Similar evaluation may be indicated if there are positive responses to medical history questions pertaining to the reproductive system.

REFERENCES:

1. [29 CFR 1919.1047](#).
2. 29 CFR 1926.1147
3. [NIOSH Current Intelligence Bulletin #35, Ethylene Oxide, 1981](#)
4. [HAZ-MAP – Ethylene Oxide](#)
5. [OSHA Safety and Health Topics Ethylene Oxide](#)

REVIEWED: SEPTEMBER 2009

ETHYLENEIMINE

149

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
ethyleneimine	KX5075000	151-56-4
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	Yes
AST	*	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	Yes
Comments on laboratory results:	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Eyes	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures listed on OPNAV 5100/15?	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH OSH Pocket Guide to Ethylenimine, September 2005](#)
2. [OSHA STANDARD 29 CFR 1910.1003](#). Former standard 29 CFR 1910.1012.
3. [29 CFR 1926.1103](#)
4. [HAZ-MAP - Ethylenimine \(http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=280\)](http://hazmap.nlm.nih.gov/cgi-bin/hazmap_link?tbl=TblAgents&id=280).

REVIEWED: OCTOBER 2008

FLUORIDES (INORGANIC)

150

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
fluorides	LM6290000	16984-48-8
calcium fluoride	EW1760000	7789-75-5
carbonyl fluoride	FG6125000	353-50-4
perchloryl fluoride	SD1925000	7616-94-6
sulfuryl fluoride	WT5075000	2699-79-8
fluorine	LM6475000	7782-41-4
hydrofluoric acid	MW7875000	7664-39-3

See [Chemical Stressors List](#) for additional compounds

EXAM ELEMENT	Program Frequency	BASE	PERI	TERM
Medical history: have you ever had:			Annual	
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual		No
Major illness or injury	Yes	Annual		No
Hospitalization or surgery	Yes	Annual		No
Cancer	Yes	Annual		No
Back injury	Yes	Annual		No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual		No
Have you ever smoked	Yes	Annual		No
Do you currently smoke (packs/day)	Yes	Annual		No
Heart disease, high blood pressure, or stroke	Yes	Annual		No
Current medication use (prescription or OTC)	Yes	Annual		No
Medication allergies	Yes	Annual		No
Any reproductive health concerns	Yes	Annual		No
Allergies (asthma, hay fever, eczema)	Yes	Annual		No
Skin disease	Yes	Annual		No
Hepatitis or jaundice	Yes	Annual		No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual		No
Eye irritation	Yes	Annual		No
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual		No
Kidney disease	Yes	Annual		No
Muscle or joint problems	Yes	Annual		No
Work history of:				
Exposure to hydrogen fluoride or inorganic fluorides	Yes	Annual		No
Exposure to skin irritants	Yes	Annual		No
Exposure to respiratory irritants	Yes	Annual		No
Comments on medical history:	Yes	Annual		No
Laboratory:				

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EXAM ELEMENT	BASE	PERI	TERM
Urinalysis:			
Routine:			
Urine fluoride - post shift	Yes	***	No
Radiology:			
Chest x-ray (PA)	Yes	No	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Teeth (acid erosion)	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

***At the time of the periodic examination, evaluate the need to perform a urine fluoride test. Post shift examination of the urine fluoride reflects recent exposure (in the preceding hours) and is not useful for biological monitoring if the employee has not been exposed to fluoride. The best time to obtain the urine specimen is at the end of a work week after the employee has been involved in tasks with fluoride exposure during that week. Because of the episodic exposure of most employees, the laboratory work obtained for the annual medical surveillance may not coincide with an exposure period. Ideally, the biological monitoring should be collected at the same time the Industrial Hygienist collects environmental samples.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

A preplacement spot urine fluoride is obtained for a baseline as an indicator of body burden.)

REFERENCES:

1. Federal Register volume 66, Number 172, September 5, 2001
2. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Inorganic Fluorides, 1975](#)
3. Advanced Inorganic Fluorides: Synthesis, Characterization and Applications, (Nakajima et al, 2000)
4. American Journal of Pathology: Inorganic fluoride. Divergent effects on human proximal tubular cell viability (Zager and Iwata, 1997)

REVISED: JANUARY 2008

FORMALDEHYDE

151

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
formaldehyde	LP8925000	50-00-0
Program Frequency		Annual (see provider comments)

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Recurrent skin rash	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Contact lens use	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Swelling in legs or feet (not caused by walking)	Yes	Annual	Yes
Coughing up blood (hemoptysis)	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	Yes
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	Yes
Work history of:			
Prior respirator use	Yes	Annual	Yes
If yes, any problems that interfered with use	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Exposure to formaldehyde	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Radiology:			
Chest x-ray (PA) (frequency determined by Examining physician)	Yes	No	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Eyes	Yes	Annual	Yes
Mucous membranes	Yes	Annual	Yes
Nasal mucosa (septal perforation)	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required			
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS: The employer shall institute medical surveillance programs for all employees exposed to formaldehyde at concentrations at or exceeding the action level (0.5 ppm calculated as an 8-hour TWA) or exceeding the STEL (2 ppm as a 15-minute STEL). The employer shall make medical surveillance available for employees who develop signs and symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in emergencies.

Respirators must be used during work operations for which feasible engineering and work-practice controls are not yet sufficient to reduce employee exposure to or below the PEL (0.75 ppm as an 8-hour TWA). The OSHA standard requires an annual medical examination, including spirometry, for all workers whose exposure requires use of respirators for protection. For those workers whose exposure does not require a respirator, the examiner shall review the medical and work history and determine whether an examination is required.

Examinations are required for employees exposed to formaldehyde in an emergency. The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction. Refer to 29 CFR 1910.1048, Appendix C. (<http://www.OSHA.gov/SLTC/formaldehyde/standards.html>).

For those employees getting spirometry as part of their medical surveillance examination, the OSHA standard states that the spirometry should include, at a minimum, FVC, FEV1, and FEF (Forced Expiratory Flow).

The OSHA standard does not REQUIRE a Chest X-Ray as part of Formaldehyde medical surveillance. Examining physicians should use clinical judgment to decide whether to order/perform chest x-ray (see Appendix C of the OSHA standard).

Formaldehyde is sold commercially as formalin, a colorless liquid with a pungent odor, in aqueous solutions of 37%, 44%, or 50%.

A Physician's/provider's Written Opinion is required by OSHA Standard. A sample Physician's/provider's Written Opinion can be found in [Physician's/Provider's Written Opinion Samples](#) of the Medical Matrix.

REFERENCES:

1. [29 CFR 1910.1048 Safety and Health Topics Formaldehyde](#)
2. 29 CFR 1226.1148
3. Haz Map at http://www.hazmap.nlm.nih.gov/cgi-bin/hazmap_generic?tbl=TblAgents&id=271
4. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
5. [ATSDR Toxicological Profile for Formaldehyde](#)

REVIEWED: DECEMBER 2008

GLYCIDYL ETHERS

152

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
resorcinol diglycidyl ether	VH1050000	101-90-6
oxirane, (2-propenyloxy)methyl (allyl glycidyl ether)	RR0875000	106-92-3
propane, 1,2-epoxy-3-isopropyl	TZ3500000	4016-14-2
ether, bis (2,3-epoxy propyl)	KN2350000	2238-07-5
propane, 1,2-epoxy-3-phenoxy	TZ3675000	122-60-1
propane, 1-butoxy-2,3-epoxy	TX4200000	2426-08-6
1-propanol,2,3-epoxy (glycidol)	UB4375000	556-52-5

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Eye irritation	Yes	Annual	No
Infertility or miscarriage (self or spouse)	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Spirometry:			
Spirometry (FEV1, FVC, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			

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EXAM ELEMENT	BASE	PERI	TERM
Eyes	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Glycidol, September 2005](#)
2. [OSHA Chemical Sampling Information Allyl glycidyl ether](#)
3. [Current Intelligence Bulletin-Glycidyl Ethers October 1978](#)
4. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Glycidyl Ethers, 1978](#)

REVISED: JANUARY 2008

HYDRAZINES

155

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
1,1-dimethylhydrazine	MV2450000	57-14-7
hydrazine	MV7175000	302-01-2
phenylhydrazine	MV8925000	100-63-0
methyl hydrazine	MV5600000	60-34-4

See [Chemical Stressors List](#) for additional compounds

Program Frequency: Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks (beer, wine, liquor)per week	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with numbness, tingling, weakness	Yes	Annual	Yes
In hands or feet			
Thyroid disease (heat or cold intolerance)	Yes	Annual	Yes
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes
Exposure to skin irritants	Yes	Annual	Yes
Exposure to respiratory irritants	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			

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EXAM ELEMENT	BASE	PERI	TERM
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alk. phos	Yes	No	Yes
AST	*	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Thyroid	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

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*AST for baseline is included in baseline liver profile. Only AST is required on an annual basis.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

The potential for worker exposure is primarily through inhalation and skin absorption. Liquid in the eyes or on the skin causes severe burns. Hydrazine as the vapor or liquid is a severe skin and mucous membrane irritant, a convulsant, a hepatotoxin, and a carcinogen in animals (1).

EMERGENCY NOTE: Exposure to high quantities of this agent can result in severe illness or death with some effects taking hours or days to materialize. In acute over-exposure situations, evaluation should take place in a setting where staff is able to assess and respond rapidly to life-threatening organ failure.

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Hydrazines, September 2005](#)
2. [OSHA Chemical Sampling Information Methyl Hydrazine](#)
3. [ATSDR ToxFAQs—Hydrazines, September 1997](#)
4. [Public Health Statement ATSDR—Hydrazines, 1997](#)
5. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Hydrazines, 1978](#)

REVISED: FEBRUARY 2008

HYDROGEN CYANIDE/CYANIDE SALTS

156

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
hydrogen cyanide and cyanide salts	MW6825000	74-90-8
cyanides	GS7175000	57-12-5
cyanamide	GS5950000	420-04-2
cyanogen	GT1925000	460-19-5
cyanogen chloride	GT2275000	506-77-4
calcium cyanamide	GS6000000	156-62-7
methacrylonitrile	UD1400000	126-98-7
methyl 2-cyanoacrylate	AS7000000	137-05-3
silver cyanide	VW3850000	506-64-9
calcium cyanide	EW0700000	592-01-8
potassium cyanide	TS8750000	151-50-8
sodium cyanide	VZ7525000	143-33-9

See [Chemical Stressors List](#) for additional compounds

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: Have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week? (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Tremors	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Problems with numbness, tingling, weakness in feet or hands	Yes	Annual	No
Thyroid disease (heat or cold intolerance)	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	No
Thyroid	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures listed on OPNAV 5100/15?	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Hydrogen Cyanide, September 2005](#)
2. [OSHA Safety and Health Guideline for Hydrogen cyanide--1995](#)
3. [CDC Emergency Response Safety and Health Database—Hydrogen cyanide, August 2008](#)
4. [ATSDR Medical Management Guidelines for Hydrogen Cyanide, 2007](#)
5. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Hydrogen Cyanide and Cyanide Salts, 1976](#)

REVISED: JANUARY 2008

HYDROGEN SULFIDE

158

STRESSOR(S) IN THIS PROGRAM:
hydrogen sulfide
NIOSH # MX1225000
CAS # 7783-06-4
Program Frequency Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Weight loss	Yes	Annual	No
Tremors	Yes	Annual	No
Eye irritation	Yes	Annual	No
Epilepsy (seizure disorder)	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Mental/emotional illness	Yes	Annual	No
Depression, diff concentrating, excessive anxiety	Yes	Annual	No
Personality change	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Eyes	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Respiratory system	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Hydrogen Sulfide, September 2005](#)
2. [OSHA Safety and Health e-Tool Oil and Gas Drilling and Servicing Physical Properties and Physiological Effects of Hydrogen Sulfide, January 2009](#)
3. [CDC Emergency Response Safety and Health Database—Hydrogen cyanide, August 2008](#)
4. [ATSDR Medical Management Guidelines for Hydrogen Sulfide, February 2009](#)
5. [NIOSH Criteria Documents Comprehensive Safety Recommendations for Land-Based Oil and Gas Well Drilling, 1983](#)

REVISED: FEBRUARY 2009

HYDROQUINONE (DIHYDROXY BENZENE)

159

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
hydroquinone		MX3500000	123-31-9	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Allergies (asthma, hay fever, eczema)	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Exposure to respiratory irritants	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Optometry:				
Vision screen (visual acuity)	Yes	Annual	No	
Slit lamp exam	Yes	Annual	No	
Comments on laboratory results:	Yes	Annual	No	
Physical examination:				
Vital signs	Yes	Annual	No	
Special attention in examination to:				
Eyes (conjunctiva, sclera, lens, retina)	Yes	Annual	No	
Respiratory system	Yes	Annual	No	
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No	
Other appropriate examination (specify)	Yes	Annual	No	
Comments on physical examination:	Yes	Annual	No	
Is surveillance/PPE consistent with exposures	Yes	Annual	No	
Are any abnormalities related to exposures/occupations	Yes	Annual	No	
Recommendations:	Yes	Annual	No	

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Hydroquinone primarily affects the eyes. Chronic exposure produces changes characterized as: brownish discoloration of the conjunctiva and cornea confined to the interpalpebral tissue; small opacities of the cornea; and structural changes in the cornea that result in loss of visual acuity (3). Slit lamp exam is recommended to evaluate corneal changes and opacities.

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Hydroquinone, September 2005](#)
2. [OSHA Exposure limits and symptoms of Hydroquinone, acetic acid, and glutaraldehyde exposure. 1998](#)
3. [NIOSH Criteria Documents Comprehensive Safety Recommendations for Occupational Exposure to Hydroquinone, 1978](#)

REVISED: FEBRUARY 2008

ISOCYANATES

196

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
benzene,2,4-diisocyanato-1-methyl	CZ6300000	584-84-9
hexamethylene, 1,6-diisocyanate	MO1740000	822-06-0
isocyanic acid, methylene-diphenelene ester	NQ9350000	101-68-8
isocyanic acid, 1,5-naphthylene ester	NQ9600000	3173-72-6
s-triazine-2,4,6-triol	XZ1800000	108-80-5
isocyanic acid, methylene(3,5,5-trimethyl 3 cyclohexylene) ester	NQ9370000	4098-71-9
isocyanic acid, methylenedi-4,1-cyclohexylene-ester	NQ9250000	5124-30-1

See [Chemical Stressors List](#) for additional compounds

	Program Frequency	Annual		
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Allergies (asthma, hay fever, eczema)	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Recurrent skin rash	Yes	Annual	No	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No	
Wheezing	Yes	Annual	No	
Shortness of breath	Yes	Annual	No	
Cough (dry or productive)	Yes	Annual	No	
Change or loss of vision	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Problems with balance and coordination	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Exposure to respiratory irritants	Yes	Annual	No	
Exposure to isocyanate foam or paint	Yes	Annual	No	

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EXAM ELEMENT	BASE	PERI	TERM
Sensitization to isocyanates (TDI, MDI)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Pulmonary function changes secondary to isocyanate exposure tend to occur at the end of the work-shift of work-week of exposure. The PFT, therefore, is of most use when performed at such end of work-shift times.

REFERENCES

1. [NIOSH SAFETY AND HEALTH TOPIC: ISOCYANATES](#)
<http://www.cdc.gov/niosh/topics/isocyanates>. Multiple informational sites listed under this main web site;
2. [NIOSH Pocket Guide to Chemical Hazards](#), current edition.

REVISED: OCTOBER 2008

LEAD (INORGANIC)

161

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
lead (inorganic)	OF7525000	7439-92-1
chromic acid, lead (2+) salt	GB2975000	7758-97-6
lead phosphate (3:2)	OG3675000	7446-27-7
Program Frequency	Semi-annual for biologic monitoring	

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Semi-A	Yes
Major illness or injury	Yes	***	Yes
Hospitalization or surgery	Yes	***	Yes
Cancer	Yes	***	Yes
Back injury	Yes	***	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	***	Yes
Have you ever smoked	Yes	***	Yes
Do you currently smoke (packs/day)	Yes	***	Yes
Heart disease, high blood pressure, or stroke	Yes	***	Yes
Current medication use (prescription or OTC)	Yes	***	Yes
Medication allergies	Yes	***	Yes
Any reproductive health concerns	Yes	***	Yes
Blood diseases (anemia)	Yes	***	Yes
Headache, dizziness, light-headedness, weakness	Yes	***	Yes
Heart disease, high blood pressure or stroke	Yes	***	Yes
Weight loss	Yes	***	Yes
Change or loss of vision	Yes	***	Yes
Change or loss of hearing	Yes	***	Yes
Frequent pain or tightness in chest	Yes	***	Yes
Palpitations	Yes	***	Yes
Insomnia or sleep disturbance	Yes	***	Yes
Unexplained fatigue	Yes	***	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	***	Yes
Kidney disease	Yes	***	Yes
Muscle or joint problems	Yes	***	Yes
Current pregnancy (self or spouse)	Yes	***	Yes
Impotence or sexual dysfunction	Yes	***	Yes
Infertility or miscarriage (self or spouse)	Yes	***	Yes
Problems with numbness, tingling, weakness	Yes	***	Yes
Depression, diff concentrating, excessive anxiety in hands or feet	Yes	***	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Personality change	Yes	***	Yes
Comments on medical history:	Yes	***	Yes
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	***	Yes
RBC morphology	Yes	***	Yes
Serum chemistry:			
BUN and creatinine	Yes	***	Yes
Blood lead and zinc protoporphyrin (ZPP)	Yes	Semi-A	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	***	Yes
Comments on laboratory results	Yes	Semi-A	Yes
Physical examination:			
Vital signs	Yes	***	Yes
Special attention in examination to:			
Central nervous system	Yes	***	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	***	Yes
Cardiovascular system	Yes	***	Yes
Gums (e.g. lead lines?)	Yes	***	Yes
Abdomen	Yes	***	Yes
Other appropriate examination (specify)	Yes	***	Yes
Comments on physical examination:	Yes	***	Yes
Special notations:			
Physician's/provider's written opinion required	Yes	***	Yes
Is surveillance/PPE consistent with exposures	Yes	Semi-A	Yes
Are any abnormalities related to exposures/occupations	Yes	***	Yes
Recommendations:	Yes	***	Yes

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***A medical examination identical in scope to the baseline will be conducted annually for each person found to have a blood lead concentration at or above 30 ug/100gm at any time during the prior year.

PROGRAM DESCRIPTION:

A baseline examination is required prior to assignment to a position involving potential exposures to lead that equal or exceed the action level.

A termination examination identical in scope to the baseline will be conducted just prior to the reassignment or termination of a person from a job requiring medical surveillance, unless a medical evaluation was done within the past twelve (12) months.

Guidelines for medical removal and follow-up, including written notification, are very specific. See [29 CFR 1910.1025, Appendix C](#)

PROVIDERS COMMENTS: A Physician's/provider's Written Opinion is required by OSHA Standard. A sample Physician's/provider's Written Opinion can be found in [Physician's/Provider's Written Opinion Samples](#).

This program consists of; preplacement medical examination, semiannual blood lead monitoring, and follow-up medical evaluations and blood lead analysis based on the results of blood lead analysis and physician opinion. Personnel are included in this program when industrial hygiene surveillance indicates that they perform work or are likely to be in the vicinity of an operation which generates airborne lead concentrations at or above the Action Level 30 days per year. Inclusion in this program is based on measured airborne concentrations without regard to respirator use, and therefore does not indicate that an individual is overexposed to lead.

REFERENCES:

1. [29 CFR 1910.1025—Lead](#)
2. [OSHA 1910.1025A-- Substance data sheet for occupational exposure to lead](#)
3. [OPNAVINST 5100.23](#) (current series), Chapter 21;
4. [OPNAVINST 5100.19](#) (current series), Chapter B10.
5. Industrial Hygiene Sampling Guide, Consolidated Industrial Hygiene Laboratories, Current Edition.
6. [Federal Registers Notice of Availability of the Regulatory Flexibility Act Review of the Occupational Safety Standard for Lead in Construction - 72:54826-54830 September 2007](#)
7. [NIOSH Pocket Guide to Chemical Hazards Lead, September 2005](#)
8. [ATSDR ToxFAQs—Lead, January 2006](#)
9. [ATSDR Case Studies in Environmental Medicine—Lead Toxicity, 2005](#)
10. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Inorganic Lead 1978](#)

REVISED: OCTOBER 2008

MANGANESE OXIDE FUMES

210

STRESSOR(S) IN THIS PROGRAM:

NIOSH #
OO9275000

CAS #
7439-96-5
Annual

manganese (and compounds)

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Blood diseases (anemia)	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Tremors	Yes	Annual	No
Cough	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Mental/emotional illness	Yes	Annual	No
Depression, diff concentrating, excessive anxiety	Yes	Annual	No
Personality change	Yes	Annual	No
Work history of:			
Exposure to dusts (coal, blast, grit, sand, nuisance)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			

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EXAM ELEMENT	BASE	PERI	TERM
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Respiratory system	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Manganese compounds and fume, September 2005](#)
2. [OSHA 29 CFR 1926.55 App A Gases, vapors, fumes, dusts, and mists.](#)
3. [ATSDR Public Health Statement for Manganese September 2008](#)

REVISED: DECEMBER 2008

MERCURY

163

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
mercury (aryl and inorganic compounds)	OV4550000	7439-97-6
mercury (alkyl compounds)	OV4550000	7439-97-6
chloroethyl mercury	OV9800000	107-27-7
mercury (vapor)	OV4550000	7439-97-6
	Program Frequency	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Weight loss	Yes	Annual	Yes
Tremors	Yes	Annual	Yes
Tooth or gum disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with balance and coordination	Yes	Annual	Yes
Problems with numbness, tingling, weakness, in hands or feet	Yes	Annual	Yes
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	Yes
Personality change	Yes	Annual	Yes
Comments on medical history:			
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Differential white blood cell count	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Serum chemistry:			
BUN and creatinine	Yes	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Urine chemistry:			
Urine mercury	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:			
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Urine mercury levels can be performed on spot urine collections, but should be corrected to creatinine level.

Acute exposure to high concentrations of mercury vapor causes severe respiratory damage, whereas chronic exposure to lower levels is primarily associated with central nervous system damage. Acute mercury poisoning can occur from inhalation of high concentrations of mercury vapor or dust. If the concentration of mercury vapor is high enough, the exposure will result in tightness and pain in the chest, difficulty in breathing, coughing, and shortly thereafter, a metallic taste, nausea, abdominal pain, vomiting diarrhea, headache, and occasionally albuminuria.

With chronic exposure to mercury vapor, early signs are nonspecific and include weakness, fatigue, anorexia, loss of weight and disturbances of gastrointestinal function. At higher exposure levels, a characteristic mercurial tremor appears. Personality changes are the most common findings in chronic mercurial poisoning. Symptoms may first occur after a very few weeks of exposure, or they may not become apparent for several years. It has been estimated that the probability of manifesting typical mercurialism with tremor and behavioral changes will increase with exposures to concentrations of 0.1mg/m³ or higher. There is no evidence of effects at concentrations below 0.01 mg/m³.

REFERENCES:

[NIOSH Occupational Health Guideline for Inorganic Mercury](#), DHHS Pub. No. 73-11024

REVISED: NOVEMBER 2008

METHYL BROMIDE

215

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
methyl bromide	PA4900000	74-83-9
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Tremors	Yes	Annual	No
Change or loss of vision	Yes	Annual	No
Eye irritation	Yes	Annual	No
Epilepsy (seizure disorder)	Yes	Annual	No
Neurologic disorder, gait change, paresthesia, Coordination loss	Yes	Annual	No
Mental/emotional illness	Yes	Annual	No
Personality change	Yes	Annual	No
Problems with balance and coordination	Yes	Annual	No
Problems with numbness, tingling, weakness in Hands or feet	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No
Optometry:			
Vision screen (visual acuity)	Yes	Yes	No
Comments on laboratory results:			
Physical examination:			

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EXAM ELEMENT	BASE	PERI	TERM
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify):	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS: Although X-ray is only done for baseline exam (per NIOSH reference above), changes in PFTs should prompt further evaluation, including X-ray.

REFERENCES:

1. NIOSH [Current Intelligence Bulletin 43 Monohalomethanes](#), U.S. Department Of Health And Human Services, Sept.1978.
2. Gunther FA, Gunther JD. Residue Reviews. New York, NY: Springer-Verlag; 1983: vol.88:102-150.
3. Cralley LJ, Cralley LV. Patty's Industrial Hygiene And Toxicology 3rd Ed. New York, NY: John Wiley & Sons, Inc. 1981: vol.2B:3442-3444, 3472-3478.
4. [Reigart JR, and Roberts JR. Recognition and Management of Pesticide Poisonings, Fifth Edition. United States Environmental Protection Agency. 1999:132-133](#)
<http://epa.gov/oppfead1/safety/healthcare/handbook/handbook.htm>.

REVISED: OCTOBER 2008

METHYL CHLOROMETHYL ETHER

166

STRESSOR(S) IN THIS PROGRAM:

chloromethyl methyl ether

NIOSH #
KN6650000

CAS #
107-30-2
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Treatment with steroids or chemotherapy/cytotoxic drugs	Yes	Annual	Yes
Decreased immunity	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Respiratory system	Yes	Annual	Yes
Lymphatic system	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Commercial grade CMME is contaminated with bis-chloromethylether. Commercial grade CMME is a known human carcinogen.

REFERENCES:

1. [29 CFR 1910.1003](#).
2. [29 CFR 1926.1103](#)
3. Former standard 29 CFR 1910.1006.
4. [Chemical Sampling Information Chloromethyl Methyl Ether](#), April 1993
5. IARC Monograph on the Evaluation of Carcinogenic Risks to Humans: Overall Evaluation of Carcinogenicity: An updating of IARC Monographs, Vol 1-42, Supp 7, pp 131-132. Lyon International Agency for Research on Cancer, 1987.
6. [NIOSH Pocket Guide for Chemical Hazards Chloromethyl methyl ether](#)

REVIEWED: DECEMBER 2008

4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA) (ALSO MBOCA)

167

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
4,4'-methylene bis(2-chloroaniline)	CY1050000	101-14-4
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/150)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Hematology:			
Complete blood count	Yes	Annual	Yes
Serum chemistry:			
Liver profile to include:			
AST , TOTAL BILIRUBIN, ALKALINE PHOSPHATATE	Yes	No	Yes
AST	*	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	Annual	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Liver	Yes	Annual	Yes
Kidney	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Hematopoietic system (bruising, petechiae, pallor)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

[OSHA Health Guideline revised 26 April 1999:](http://www.OSHA.gov/SLTC/healthguidelines/4-4-methylenebis-2-chloroaniline/recognition.html)
(<http://www.OSHA.gov/SLTC/healthguidelines/4-4-methylenebis-2-chloroaniline/recognition.html>)

REVISED: NOVEMBER 2008

METHYLENE CHLORIDE (DICHLOROMETHANE)

168

STRESSOR(S) IN THIS PROGRAM:

methylene chloride

NIOSH #
PA8050000

CAS #
75-09-2
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Blood diseases (anemia)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Use of nitrate medication (nitroglycerine)	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Eye irritation	Yes	Annual	Yes
Chest pain, angina, heart attack	Yes	Annual	Yes
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	Yes
Work history of:			
Exposure to skin irritants	Yes	Annual	Yes
Exposure to respiratory irritants	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Exposure to methylene chloride, dichloromethane, methylene dichloride	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Hematology:			
Complete blood count	Yes	***	Yes
Serum chemistry:			
Liver profile to include:			
AST , ALT, total bilirubin, alk. phos	Yes	***	Yes
Electrocardiogram	Yes	No	No
Comments on laboratory results:	Yes	***	Yes
Physical examination:			
Vital signs	Yes	***	Yes
Special attention in examination to:			
Central nervous system	Yes	***	Yes
Cardiovascular system	Yes	***	Yes
Eyes	Yes	***	Yes
Liver	Yes	***	Yes
Respiratory system	Yes	***	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	***	Yes
Other appropriate examination (specify)	Yes	***	Yes
Comments on physical examination:	Yes	***	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	***	Yes
Physician's/provider's written opinion required	Yes	***	Yes
Is surveillance/PPE consistent with exposures	Yes	***	Yes
Are any abnormalities related to exposures/occupations	Yes	***	Yes
Recommendations:	Yes	***	Yes

***The employer shall update the medical and work history for each affected employee annually. The employer shall provide periodic physical examinations, including appropriate laboratory surveillance, as follows:

FREQUENCY OF EXAMINATION

AGE	FREQUENCY
< 45 yrs	3 years
≥ 45 yrs	Annual

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Affected employees: Employees who are, or may be exposed to methylene chloride as follows:

1. At or above the AL on 30 or more days a year, or above the 8-hour PEL or STEL on 10 or more days per year:

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2. Above the 8hr-TWA, PEL or STEL for any time period where an employee has been identified by a physician or other licensed health care professional as being at risk from cardiac disease or from some other serious methylene chloride-related health condition, and such employee requests inclusion in the medical surveillance program;
3. During an emergency. (NOTE: When the employee has been exposed to methylene chloride in emergency situations, the content of emergency medical surveillance is discussed in 29 CFR 1910.)

Consider adding baseline PFTs and end-shift carboxyhemoglobin (recommended by OSHA in Appendix B, but not required by the standard).

End of shift carboxyhemoglobin may be determined periodically, and any level above 3% for non-smokers and above 10% for smokers should prompt an investigation of the worker and his/her workplace.

REFERENCES:

1. [29 CFR 1910.1052](#)
2. [29 CFR 1926.1152](#)
3. DODI 6055.05M, Table C2.T12, Methylene chloride
4. [NIOSH Occupational Health Guideline for Methylene Chloride](#)

REVISED: JANUARY 2010

4,4'-METHYLENEDIANILINE (MDA)

213

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
4,4'-diaminodiphenylmethane	BY5425000	101-77-9
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Past work exposure to MDA or other toxic substances	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Use of barbiturates	Yes	Annual	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			

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EXAM ELEMENT	BASE	PERI	TERM
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase, ALT	Yes	Annual	Yes
BUN and creatinine	Yes	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis without microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
HEENT	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Cardiovascular system	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Abdomen	Yes	Annual	Yes
Genitourinary tract	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Examinations are required for employees exposed to methylenedianiline in an emergency. Refer to [29 CFR 1910.1050, Appendix C](#).

The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction.

See [Physician's/Provider's Written Opinion Samples](#) of this manual.

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.1050](#)
2. Aitio, Antero, M.D., Ph.D., Biologic Monitoring, p 178-179;
3. Cocker, J., Assessment of occupational exposure to 4,4'-diaminodiphenylmethane (methylenedianiline) by gas chromatography-mass spectrometry analysis of urine, British Journal of Industrial Medicine, 1986;43:620-625;

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4. Hathaway, Gloria J. Ph.D., and J.P. Hughes, M.D., Supplements to Chemical Hazards of the Workplace, 2nd ed., Volume 1, Number 5.

REVIEWED: OCTOBER 2008

ALPHA-NAPHTHYLAMINE

170

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
alpha-naphthylamine	QM1400000	134-32-7
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Decreased immunity	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Shortness of breath	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.1003](#)
2. [29 CFR 1926.1103 Carcinogens \(4-Nitrobiphenyl, etc.\)](#).
3. [29 CFR 1910.1004 alpha-Naphthylamine](#)
4. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Supplement 7, 1987. Former standard 29 CFR 1910.1004.

REVIEWED: OCTOBER 2008

BETA-NAPHTHYLAMINE

171

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
beta-naphthylamine	QM2100000	91-59-8	
Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Decreased immunity	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Impotence or sexual dysfunction	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			

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EXAM ELEMENT	BASE	PERI	TERM
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.1003](#)
2. [29 CFR 1910.1009 beta-Naphthylamine.](#)
3. [29 CFR 1926.1109 beta-Naphthylamine.](#)

REVIEWED: OCTOBER 2008

NICKEL CARBONYL

173

STRESSOR(S) IN THIS PROGRAM:
 nickel carbonyl
Program Frequency

NIOSH #
 QR6300000
CAS #
 13463-39-3
 Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Work history of:			
Exposure to respiratory irritants	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Nasal mucosa (septal perforation)	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Periodic urine nickel measurement has not been correlated with chronic health outcomes; however, urine nickel evaluation may assist the provider in determining if a worker with mild symptoms of nickel carbonyl toxicity would benefit from chelation therapy. Chelation therapy for workers with moderate or severe symptoms of nickel carbonyl toxicity is based on history and should not be delayed awaiting laboratory determination of urine nickel levels.

REFERENCES:

1. NIOSH-OSHA, Occupational Guideline for Nickel Carbonyl, Washington, DC: DHHS/DOL; 1978: 1-5;
2. [NIOSH pocket guide to Chemical Hazards Nickel Carbonyl](#)
3. [OSHA Chemical Sampling Information Nickel Carbonyl](#)
4. National Research Council, Nickel: Medical and Biologic Effects of Environmental Pollutants, Washington, DC: National Academy of Sciences: 1975; 97-128.

REVISED: JANUARY 2008

NICKEL (INORGANIC)

172

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
nickel (metal)	QR5950000	7440-02-0
nickel (soluble compounds)	QR5950000	7440-02-0
nickel carbonate	QR6240000	65485-96-1
nickel II hydroxide	QR7040000	12054-48-7
nickel II oxide	QR8400000	1913-99-1
nickel subsulfide	OR9800000	12035-72-2

See [Chemical Stressors List](#) for additional compounds

EXAM ELEMENT	Program Frequency	BASE	PERI	TERM
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Annual	Yes	Annual	Yes
Major illness or injury	Annual	Yes	Annual	Yes
Hospitalization or surgery	Annual	Yes	Annual	Yes
Cancer	Annual	Yes	Annual	Yes
Back injury	Annual	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Annual	Yes	Annual	Yes
Have you ever smoked	Annual	Yes	Annual	Yes
Do you currently smoke (packs/day)	Annual	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Annual	Yes	Annual	Yes
Current medication use (prescription or OTC)	Annual	Yes	Annual	Yes
Medication allergies	Annual	Yes	Annual	Yes
Any reproductive health concerns	Annual	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Annual	Yes	Annual	Yes
Skin disease	Annual	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Annual	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs)	Annual	Yes	Annual	Yes
Work history of:				
Exposure to skin irritants	Annual	Yes	Annual	Yes
Exposure to respiratory irritants	Annual	Yes	Annual	Yes
Family history of:				
Cancers (leukemia, tumors)	Annual	Yes	Annual	Yes
Comments on medical history:	Annual	Yes	Annual	Yes
Laboratory:				
Radiology:				
Chest x-ray (PA)	Annual	Yes	No	Yes
Comments on laboratory results:	Annual	Yes	No	Yes
Physical examination:				
Vital signs	Annual	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Special attention in examination to:			
Nasal mucosa (septal perforation)	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. NIOSH-OSHA, Occupational Guidelines for Nickel Metal and Soluble Nickel Compounds, Washington, DC. DHHS/DOL: 1978: 1-7.
2. National Research Council, Nickel: Medical and Biologic Effects of Environmental Pollutants, Washington, DC: National Academy of Sciences: 1975; 97-128.

REVISED: FEBRUARY 2008

4-NITROBIPHENYL

175

	NIOSH #	CAS #	
STRESSOR(S) IN THIS PROGRAM:			
4-nitrobiphenyl	DV5600000	92-93-3	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Problems with urination/blood in urine)	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Liver profile to include:			
AST , total bilirubin, alk phos, ALT	Yes	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. 4-nitrobiphenyl is no longer manufactured or used in the United States. However, it is one of the original OSHA 13 carcinogens.
2. NIOSH (1988) recommended medical surveillance includes evaluation of liver function and integrity. The basis of the NIOSH recommendation is not given. It is recommended that review and assessment of hepatic function be included.
3. As one of the OSHA 13 carcinogens, 29 CFR 1910.1003 applies. In accordance with 1910.1003(d)(2)(iii), any worker involved in exposure incidents for all OSHA-regulated carcinogens must have a special medical surveillance annotation noted by a physician within 24 hours of exposure. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section of 29 CFR.

REFERENCES:

1. [29 CFR 1910.1003](http://www.OSHA.gov/pls/OSHAweb/owadisp.show_document?p_table=STANDARD&p_id=10007)
(http://www.OSHA.gov/pls/OSHAweb/owadisp.show_document?p_table=STANDARD&p_id=10007)
2. [29 CFR 1926.1103](http://www.OSHA.gov/pls/OSHAweb/owadisp.show_document?p_table=STANDARD&p_id=10875)
(http://www.OSHA.gov/pls/OSHAweb/owadisp.show_document?p_table=STANDARD&p_id=10875)

REVISED: APRIL 2007

NITROGEN OXIDES

174

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
nitrogen dioxide	QW9800000	10102-44-0
nitric oxide	QX0525000	10102-43-9
also see nitrous oxide program #108		

Program Frequency Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Eye irritation	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			

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EXAM ELEMENT	BASE	PERI	TERM
Cardiovascular system	Yes	Annual	No
Eyes	Yes	Annual	No
Teeth (acid erosion)	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. Community studies have demonstrated that exposure to oxides of nitrogen may aggravate existing pulmonary conditions or increase the number of acute respiratory diseases. The level of physical activity during exposure increases the total uptake and alters the distribution of inhaled NO₂. Additional questioning of frequency of respiratory infections and effects of level of activity during work exposure may be commented on in the patient note.
2. Tooth erosion would likely occur at levels far above the OEL and would not be a sensitive indicator of exposure. Effects on the mucosa (irritation) at levels near the current OSHA PEL are documented and should be considered as an alternative focus for the examination.
3. This Program requires a pre-placement and annual (or periodic) examination, but do not specially require a termination examination.

REFERENCES:

NIOSH Criteria for a Recommended Standard.

[Occupational Exposure to Nitric Acid, DHHS Pub. No. 76-141](#)

(<http://www.cdc.gov/niosh/76-141.html>).

REVISED: MARCH 2008

NITROGLYCERINE

176

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
nitroglycerin	QX2100000	55-63-0
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Use of nitrate medication (nitroglycerine)	Yes	Annual	No
Use of medication to treat erectile dysfunction (ED)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No
Cardiovascular or circulatory condition or disease	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Migraine headache	Yes	Annual	No
Vibration white finger disease	Yes	Annual	No
Work history:			
Exposure to other explosives or propellants	Yes	Annual	No
Family history of:			
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Cardiology:			
Electrocardiogram	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Cardiovascular system	Yes	Annual	No
Peripheral vascular system (Reynaud's)	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. Recommend asking about “sildenafil (Viagra) and other agents used to treat erectile dysfunction” on medication list. Phosphodiesterase inhibitors are contraindicated with use of medicinal NTG due to the increased hypotensive effect.
2. Headaches associated with organic nitrates classically begin as mild frontal headaches and become progressively worse and throbbing in nature. These H/As frequently disappear with further exposure as tolerance develops and recur following a period where there is no exposure (Monday morning).
3. Palpitations, nausea, and feeling of heat in face/upper extremities are frequently reported worker complaints associated with excessive exposure to NTG.
4. The formation of methemoglobinemia has been reported in association with high doses of NTG therapy or high dose occupational exposure; it is rare at conventional doses of NTG. But, this may be clinically significant following large exposures or in individuals with a MetHb reductase deficiency or a congenital MetHb variant. In case of exposure to high dose NTG, arterial blood gases would be drawn to determine MetHb levels.

REFERENCES:

[NIOSH Occupational Safety and Health Guideline for Nitroglycerine and Ethylene Glycol Dinitrate](#)

REVISED: FEBRUARY 2008

2-NITROPROPANE

211

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
2-nitropropane	T25250000	79-46-9	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Cough (dry or productive)	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Work history of:			
Exposure to respiratory irritants	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Yes	Yes
Urinalysis without microscopic	Yes	Yes	Yes
Radiology:			
Chest x-ray (PA)	Yes	Yes	Yes
Spirometry:			
Spirometry (FEV1, FVC, FEV1/FVC)	Yes	Yes	Yes
Vision screen (visual acuity)	Yes	Yes	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			

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EXAM ELEMENT	BASE	PERI	TERM
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
CNS	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Kidney/renal system	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. For the OSHA 13 named suspect carcinogens regulated under 29 CFR 1910.1003, a physical examination must be performed on exposed individuals at least annually. Although 2-NP is NOT included in the OSHA 13, aspects of that exam will be incorporated into this exam as 2-NP is considered a “Possible Human Carcinogen”.
2. NIOSH recommends that the medical evaluation “concentrate on the eyes, skin, liver, kidneys, and nervous and respiratory systems”. It is recommended that PFT be done as an annual study for this stressor. NIOSH 1988 also adds a periodic CXR to the assessment. A CXR should be done periodically.
3. It is recommended that the addition of specific review of, and assessing function of the eyes (external examination and visual acuity), skin (condition and lesions), and kidneys (routine urinalysis), as well as respiratory tract (PFT) and liver (complete LFTs), be considered for inclusion in the baseline, monitoring, and termination examinations.

REFERENCES:

[NIOSH Occupational Safety and Health Guideline for 2-Nitropropane Potential Human Carcinogen](#)

REVISED: JANUARY 2008

N-NITROSODIMETHYLAMINE

177

STRESSOR(S) IN THIS PROGRAM:

n-nitrosodimethylamine

NIOSH #
IQ0525000

CAS #
62-75-9
Annual

Program Frequency

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Family history of:			
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Yes	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Kidney/renal system	Yes	Annual	Yes
Liver	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. N-nitrosodimethylamine is one of the OSHA thirteen "Suspect Human Carcinogens".
2. NIOSH recommends the medical evaluation "concentrate on the liver, kidneys, and respiratory system including standardized questionnaires and tests of lung function". The literature is variable on pulmonary effects, but it is suggested that PFT be done.

REFERENCES:

1. [29 CFR 1910.1003](#)
2. 29 CFR 1926.1103

REVIEWED: DECEMBER 2008

ORGANOTIN COMPOUNDS

180

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
tin (organic compounds)		
tributyltin oxide	JN8750000	56-35-9
methyl tin mercaptide		
tributyltin benzoate	WH6710000	4342-36-3
dibutyltin dilaurate	WH7000000	77-58-7
tributyltin fluoride	WH8275000	1983-10-4

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Change or loss of vision	Yes	Annual	No
Eye irritation	Yes	Annual	No
Liver disease	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Hematology:			
CBC	Yes	Yes	No
Differential WBC count	Yes	Yes	No
Serum chemistry:			

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EXAM ELEMENT	BASE	PERI	TERM
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Yes	No
Urinalysis without microscopic	Yes	Yes	No
Spirometry:			
Spirometry (FEV1, FVC, FEV1/FVC)	Yes	No	No
Optometry:			
Vision screen (visual acuity)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Kidney	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. Visual changes and disturbances associated with exposure to airborne organotin compounds are manifested as irritation and/or blurring of vision.
2. NIOSH and the EPA consider the kidney (urinary tract) and blood, in addition to the CNS, liver, skin/eyes as target organs. Recommend urinalysis and CBC on all exams as both tests reveal hemolysis.
3. It is recommended that the CNS-directed examination should include assessment of psychological (behavioral) aspects during the examination.
4. One clinical case report revealed hepatomegaly and tenderness without elevation in liver enzymes following exposure to an organotin compound. It is recommended that a complete laboratory assessment of liver function be made using a liver panel.
5. The EPA has based their exposure standards and minimal risk levels (MRLs) on immunological criteria from animal studies. The inclusion of a CBC with differential can screen and assess this aspect.

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REFERENCES:

[NIOSH Criteria Documents: Criteria for a Recommended Standard: Occupational Exposure to Organotin Compounds, DHHS Pub. No. 77-115 \(http://www.cdc.gov/niosh/77-115.html\)](http://www.cdc.gov/niosh/77-115.html).

REVISED: DECEMBER 2008

OTTO FUEL II AND OTHER ALKYL NITRATE PROPELLANTS AND EXPLOSIVES
186

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
propylene glycol dinitrate	TY6300000	6423-43-4
ethylene glycol dinitrate	KW5600000	628-96-6
ethylhexyl nitrate		27247-96-7

See [Chemical Stressors List](#) for additional compounds

	Program Frequency			
		Annual		
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Use of nitrate medication (nitroglycerine)	Yes	Annual	No	
Use of medication to treat erectile dysfunction (ED)	Yes	Annual	No	
Headache, dizziness, light-headedness, weakness	Yes	Annual	No	
Change or loss of vision	Yes	Annual	No	
Chest pain, angina, heart attack	Yes	Annual	No	
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No	
Migraine headache	Yes	Annual	No	
Family history of:				
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Hematology:				
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	No	
Serum chemistry:				
BUN and creatinine	Yes	Annual	No	
Urinalysis without microscopic	Yes	Annual	No	

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EXAM ELEMENT	BASE	PERI	TERM
Cardiology:			
Electrocardiogram	Yes	Annual	No
Optometry:			
Vision screen (visual acuity)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. The NIOSH criteria document of 1978 combines nitroglycerine (NG) and ethylene glycol dinitrate (EGDN) and uses the same criteria for exposure to either or both. The medical surveillance criteria are generally the same.
2. This program category includes OFII (a mixture containing PGDN), as well as other organic nitrate propellants. The medical surveillance is therefore based upon the “pooled toxic effects” of the general class of these chemicals. The current assessment guidance may not be totally applicable to all chemicals in the class, but this is still a good approach and the best available with current data.
3. Headaches typically associated with organic nitrates classically begin as mild frontal headaches and become progressively worse and throbbing in nature, and frequently disappear with further exposure as tolerance develops.
4. Emphasis of eye/vision to include sclera/mucosa and evaluation of extraocular eye movements. Although not adopted, the OSHA revised 1988 rulemaking for the adoption of “new PELs” specifically lists PGDN as a neurotoxicant. Include evaluation of extraocular eye movements in assessment of eye and vision testing, or visual evoked response (VER) as screening tests. In addition to seeing/detecting conjunctival irritation, these tests may detect CNS effects noted in the literature.
5. Animal data indicate that renal pathology can also occur from exposure to various organic nitrates. In light of the combined group approach for this program stressor, urinalysis and renal testing can address this aspect.

NMCPHC-TM OM 6260

REFERENCES:

1. NAVMEDCOMINST 6270.1, 19 MAR 85, HEALTH HAZARDS OF OTTO FUEL II;
2. CHIEF BUMED ltr 5100, Ser 242/4U763715 of 2 Feb 94;
3. Jones RA., Strickland, JA., Siegel J. Toxicity of propylene 1,2-dinitrate in experimental animals, Toxicology and Applied Pharmacology, 1972;22:128-137;
4. NAVENVIRHLTHCEN ltr 6260 Ser 3213mt/04449 of 27 Apr 90.

REVISED: FEBRUARY 2006

POLYCHLORINATED BIPHENYLS (PCB)

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
chlorodiphenyl (42% chlorine)	TQ1356000	53469-21-9
chlorodiphenyl (54% chlorine)	DV2063000	27323-8-8
aroclor 1260	TQ1362000	11096-82-5
aroclor 1254	TQ1360000	11097-69-1
kanechlor 500	DY8100000	25429-29-2

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Hepatitis or jaundice	Yes	Annual	No
Liver disease	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Annual	No
GGT	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Liver	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

Placement on medical surveillance program is for personnel exposed to PCB's above the medical surveillance action level. These levels are based on airborne concentrations of PCB's. There is no current required medical surveillance based on skin contact alone but those workers with reasonable possibility of regular skin contact should also be considered for medical surveillance.

PROVIDER'S COMMENTS:

1. Recommend directing examination more specifically to visible manifestations of the relatively rare chloracne: comedones and straw-colored cysts around the eyes, behind the ears, and on the genitalia, back, and shoulders; as well as, hypertrichosis; hyperpigmentation; brown discoloration of the nails; and conjunctivitis and eye discharge.
2. IAW with early NIOSH recommendations, in conjunction with the reproductive health concerns question in the exam, discuss child-bearing and nursing for the purpose of counseling.
3. Although correlations between serum triglycerides or cholesterol levels and serum PCBs in PCB-exposed workers have been reported, these appear to be a high dose phenomenon.
4. Do a complete liver function panel (AST, ALT, GGT, DB, TB, and PT) for baseline and annual assessments. A comparison of the AST level and the ALT level is often made in the assessment of etiology. PCBs are known inducers of microsomal enzymes; the GGT is a sensitive, non-specific indicator of this effect. Studies suggest a threshold of 100 ppb in serum for a phenobarbital-type induction in humans (Brown JF, 1994).
5. Post-exposure blood PCB level should be considered. A baseline may not be necessary for all personnel as it is anticipated that there are relatively few current workers (HAZMAT personnel; mishap exposure) who remain occupationally exposed to PCBs above the action level. The majority of medical assessment and surveillance requests will be post-exposure following an incident. Acute and follow-up blood PCB levels can be used to evaluate the exposure in retrospect as the exact congener would not necessarily be known for pre-exposure (baseline) screening.

REFERENCES:

1. NIOSH criteria for a recommended standard...[Occupational Exposure to Polychlorinated Biphenyls, DHHS Pub. No. 77-225 \(http://www.cdc.gov/niosh/77-225.html \)](http://www.cdc.gov/niosh/77-225.html);
2. NIOSH Current Intelligence Bulletin 45, Feb 24, 1986;
3. NAVENVIRHLTHCEN letter 6263.1 Ser 09nd/11643m 30 Nov 89, Advisory on Polychlorinated Biphenyls (PCBs).

REVISED: FEBRUARY 2008

BETA-PROPIOLACTONE

185

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
beta-propiolactone		RQ7350000	57-57-8	
		Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Skin disease	Yes	Annual	Yes	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes	
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes	
Decreased immunity	Yes	Annual	Yes	
Liver disease	Yes	Annual	Yes	
Current pregnancy (females only)	Yes	Annual	Yes	
Work history of:				
Exposure to carcinogens	Yes	Annual	Yes	
Family history of:				
Genetic disease (include children)	Yes	Annual	Yes	
Cancer (leukemia, tumors)	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	
Laboratory				
AST, total bili, alk phos, ALT	Yes	Annual	Yes	
Urinalysis	Yes	Annual	Yes	
Spirometry	Yes	Annual	Yes	
Physical examination:				
Vital signs	Yes	Annual	Yes	
Special attention in examination to:				
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes	
Eyes	Yes	Annual	Yes	

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EXAM ELEMENT	BASE	PERI	TERM
Kidney/renal system	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. BETA-PROPIOLACTONE is one of the OSHA thirteen "Suspect Human Carcinogens".
2. Recommend commenting on any past or chronic liver disease, immuno-compromised state, treatment with steroids or cytotoxic agents and pregnancy status to medical history → counseling.

REFERENCES:

1. 29 CFR 1910.1003
2. 29 CFR 1926.1103.
3. Former standard 29 CFR 1910.1013.

REVIEWED: MARCH 2008

SILICA (CRYSTALLINE)

187

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
silica crystalline cristobalite	VV7325000	14464-46-1
silica crystalline quartz	VV7330000	14808-60-7
silica crystalline tridymite	VV7335000	15468-32-3
silica crystalline tripoli	VV7336000	1317-95-9
	Program Frequency	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Autoimmune disease or condition	Yes	Annual	No
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	Annual	No
Tuberculosis	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Kidney disease	Yes	Annual	No
Work history of:			
Exposure to dusts (coal, blast, grit, sand, nuisance)	Yes	Annual	No
Exposure to asbestos	Yes	Annual	No
Exposure to silica or sand	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Urinalysis	Yes	Annual	No
Additional lab tests:			
Tuberculosis screen	Yes	Annual	No
Radiology:			
Chest x-ray (PA)	Yes	Trienn	No
Spirometry:			

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EXAM ELEMENT	BASE	PERI	TERM
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Special notations:			
Substance known human carcinogen	Yes	Annual	No
Counseling regarding combined effects of smoking and respirable crystalline silica (RCS) exposure	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Has patient completed an updated OSHA respiratory questionnaire	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

1. Respirable crystalline silica is designated a carcinogen. In view of current concern for carcinogenicity, patients should be counseled regarding this carcinogenic effect.
2. Although it is assumed that currently exposed individuals will be in the Respiratory Protection Program, a question determining if the individual has completed an updated OSHA Respirator Medical Evaluation Questionnaire (Mandatory) as required under Appendix C to Sec. 1910.134 is recommended. The screening questions are much more extensive than contained in the entry for silica.
3. Recommend questions for screening for autoimmune conditions (rheumatoid arthritis, scleroderma, Sjogren's syndrome, and lupus), as well as kidney diseases (nephritis and end-stage renal disease). A urinalysis can provide important renal function information. Evidence supporting these conditions with silica exposure (and with and without the presence of silicosis) is found in the recent literature.
4. The NIOSH ALERT of August 1992 recommends a chest X-ray every three years classified according to the 1980 International Labour Office (ILO) Classification of Radiographs of the Pneumoconioses. Some sources have recommended that the frequency be based upon years and intensity of exposure.
5. NIOSH lists the eye and respiratory system as target organs. Recommend including specific evaluation of the cornea for physical damage.

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REFERENCES:

NIOSH Criteria for a Recommended Standard. [Occupational Exposure to Crystalline Silica](http://www.cdc.gov/niosh/75-120.html),
DHHS Pub. No. 75-120 (<http://www.cdc.gov/niosh/75-120.html>), 1974

REVISED: FEBRUARY 2006

STYRENE

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
styrene		WL3675000	100-42-5	
	Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more (beer, wine, liquor)drinks per week	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Blood diseases (anemia)	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No	
Headache, dizziness, light-headedness, weakness	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No	
Depression, diff concentrating, excessive anxiety	Yes	Annual	No	
Personality change	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Exposure to respiratory irritants	Yes	Annual	No	
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Spirometry:				
Spirometry (FEV1, FVC, FEV1/FVC)	Yes	No	No	
Comments on laboratory results:	Yes	No	No	
Physical examination:				
Vital signs	Yes	Annual	No	
Special attention in examination to:				
Central nervous system	Yes	Annual	No	

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EXAM ELEMENT	BASE	PERI	TERM
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Styrene, September 2005](#)
2. [OSHA Sampling and Analytical Methods, Styrene](#)
3. [ATSDR ToxFAQs—Styrene, September 2007](#)
4. The Styrene Information and Research Center (SIRC), 1987
5. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Styrene 1983](#)
6. [EPA Air Toxics Hazard Summary: Styrene, January 2000](#)

REVISED: FEBRUARY 2008

SULFUR DIOXIDE

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STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
sulfur dioxide	WS4550000	7446-09-5	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more (beer, wine, liquor)drinks per week	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)			
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	Annual	No
Eye irritation	Yes	Annual	No
Tooth or gum disease	Yes	Annual	No
Work history of:			
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FEV1, FVC, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Teeth (acid erosion)	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard. Occupational Exposure to Sulfur Dioxide, 1974](#)
2. [NIOSH Publication No. 2005-151, NIOSH Pocket Guide to Chemical Hazards, updated Sept 2005](#)
3. [NIOSH Safety and Health Topic Sulfur Dioxide](#)
4. [ATSDR ToxFAQs—Sulfur Dioxide, 1999](#)

REVISED: NOVEMBER 2007

ORTHO-TOLIDINE

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
o-tolidine		DD1225000	119-93-7	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Skin disease	Yes	Annual	Yes	
Kidney disease	Yes	Annual	Yes	
Problems with urination/blood in urine	Yes	Annual	Yes	
Work history of:				
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes	
Exposure to skin irritants	Yes	Annual	Yes	
Exposure to carcinogens	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	
Laboratory:				
Urinalysis:				
Routine:				
Urinalysis with microscopic	Yes	Annual	Yes	
Comments on laboratory results:	Yes	Annual	Yes	
Physical examination:				
Vital signs	Yes	Annual	Yes	
Special attention in examination to:				
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes	
Other appropriate examination (specify)	Yes	Annual	Yes	
Comments on physical examination:	Yes	Annual	Yes	
Special notations:				
Substance(s) suspected human carcinogen	Yes	Annual	Yes	
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes	
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes	

	EXAM ELEMENT	BASE	PERI	TERM
Recommendations:		Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

[NIOSH Pocket Guide to Chemical Hazards o-Tolidine, September 2005](#)

REVISED: MARCH 2008

ORTHO-TOLUIDINE

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
o-toluidine	XU2975000	95-53-4	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Problems with urination/blood in urine	Yes	Annual	Yes
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes
Exposure to skin irritants	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , total bilirubin, alkaline phosphatase	Yes	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Liver	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. FEDERAL REGISTER FR54:12 29 CFR PART 1910 Air Contaminates, Final Rule 2689-90, 19 Jan 89;
2. [NIOSH Pocket Guide to Chemical Hazards Toluidine, September 2005](#)
3. [OSHA Safety and Health Guideline for Toluidine](#)
4. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to o-Toluidine](#)
5. [EPA Air Toxics Hazard Summary: o-Toluidine, January 2000](#)

REVISED: APRIL 2008

1,1,2,2-TETRACHLOROETHANE

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STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
1,1,2,2-tetrachloroethane		KI8575000	79-34-5	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more (beer, wine, liquor) drinks per week	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Headache, dizziness, light-headedness, weakness	Yes	Annual	No	
Nausea or vomiting	Yes	Annual	No	
Weight loss	Yes	Annual	No	
Tremors	Yes	Annual	No	
Liver disease	Yes	Annual	No	
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No	
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	No	
Work history of:				
Exposure to respiratory irritants	Yes	Annual	No	
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Serum chemistry:				
Liver profile to include:				
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No	
AST	*	Annual	No	
Comments on laboratory results:	Yes	Annual	No	
Physical examination:				
Vital signs	Yes	Annual	No	
Special attention in examination to:				

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EXAM ELEMENT	BASE	PERI	TERM
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Liver	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc.)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards 1,1,2,2-Tetrachloroethane, September 2005](#)
2. [ATSDR ToxFAQs—1,1,2,2-Tetrachloroethane, September 2008](#)
3. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to 1,1,2,2-Tetrachloroethane, 1976](#)
4. [EPA Air Toxics Hazard Summary: 1,1,2,2-Tetrachloroethane January 2000](#)

REVISED: NOVEMBER 2008

TETRACHLOROETHYLENE (PERCHLOROETHYLENE)

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
perchloroethylene	KX3850000	127-18-4	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Hepatitis or jaundice	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Tremors	Yes	Annual	No
Change or loss of vision	Yes	Annual	No
Eye irritation	Yes	Annual	No
Liver disease	Yes	Annual	No
Infertility or miscarriage (self or spouse)	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Depression, difficulty concentrating, excessive Anxiety	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No
BUN and creatinine	Yes	Annual	No
AST	*	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [ATSDR Medical Management Guidelines Tetrachloroethylene](#)
2. [OSHA Safety and Health Guideline for Chloroform, 1992](#)
3. [National Institute of Environmental Health \(NIEH\), Chloroform](#)
4. [ATSDR ToxFAQs— Tetrachloroethylene, September 1997](#)
5. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Tetrachloroethylene 1976](#)
6. [EPA Air Toxics Hazard Summary: Tetrachloroethylene, January 2000](#)
7. Brown DP, Kaplan SD, Retrospective Cohort Mortality Study of Dry Cleaner Workers Using Perchloroethylene, Journal of Occupational Medicine 29:53551, 1987;
8. Federal Register FR54:2686-91 29 CFR Part 1910 Air Contaminants, Final rule 19 JAN 89;
9. Key MM et al. (ed.) Occupational Diseases, A Guide to their Recognition, NIOSH 1977, 213-4,448.

REVISED: JANUARY 2009

TETRYL

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STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
tetryl		BY6300000	479-45-8	
	Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Blood diseases (anemia)	Yes	Annual	No	
Allergies (asthma, hay fever, eczema)	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Liver disease	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Exposure to respiratory irritants	Yes	Annual	No	
Family history of:				
Blood diseases (anemia)	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Hematology:				
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	No	
Serum chemistry:				
Liver profile to include:				
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No	
AST	*	Annual	No	
Spirometry:				
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No	

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Tetryl, September 2005](#)
2. [OSHA Safety and Health Guideline for Tetryl](#)
3. [ATSDR ToxFAQs—Tetryl, September 1996](#)

REVIEWED: JUNE 2008

TOLUENE

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
toluene		XS5250000	108-88-3	
	Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Allergies (asthma, hay fever, eczema)	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Headache, dizziness, light-headedness, weakness	Yes	Annual	No	
Nausea or vomiting	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No	
Migraine headache	Yes	Annual	No	
Depression, diff concentrating, excessive anxiety	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Exposure to respiratory irritants	Yes	Annual	No	
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Physical examination:				
Vital signs	Yes	Annual	No	
Special attention in examination to:				
Central nervous system	Yes	Annual	No	
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No	
Eyes	Yes	Annual	No	
Mucous membranes	Yes	Annual	No	
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No	
Other appropriate examination (specify)	Yes	Annual	No	

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EXAM ELEMENT	BASE	PERI	TERM
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Toluene September 2005](#)
2. [OSHA Safety and Health Guideline for Toluene](#)
3. [ATSDR ToxFAQs—Toluene, February 2001](#)
4. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Toluene, 1973](#)
5. [EPA Air Toxics Hazard Summary: Toluene, January 2000](#)

REVISED: FEBRUARY 2008

1,1,1-TRICHLOROETHANE (METHYL CHLOROFORM)

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
methylchloroform		KJ2975000	71-55-6	
Program Frequency				
EXAM ELEMENT		BASE	PERI	TERM
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Hepatitis or jaundice	Yes	Annual	No	
Headache, dizziness, light-headedness, weakness	Yes	Annual	No	
Eye irritation	Yes	Annual	No	
Chest pain, angina, heart attack	Yes	Annual	No	
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No	
Liver disease	Yes	Annual	No	
Problems with balance, coordination, numbness, Tingling, weakness	Yes	Annual	No	
Depression, diff concentrating, excessive anxiety	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Exposure to respiratory irritants	Yes	Annual	No	
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No	
Family history of:				
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Serum chemistry:				
Liver profile to include:				
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No	

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EXAM ELEMENT	BASE	PERI	TERM
AST	*	Annual	No
Urinalysis			
Routine:			
Urinalysis with microscopic	Yes	No	No
Cardiology:			
Electrocardiogram	Yes	No	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards 1,1,1-Trichloroethane, Methyl chloroform, September 2005](#)
2. [1910.1000 TABLE Z-1 Limits for Air Contaminants.](#)
3. [ATSDR ToxFAQs—1,1,1-Trichloroethane, Methyl chloroform, July 2006](#)
4. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to 1,1,1-Trichloroethane, Methyl chloroform.](#)
5. [EPA Air Toxics Hazard Summary: 1,1,1-Trichloroethane, Methyl chloroform., January 2000](#)

REVISED: FEBRUARY 2008

TRICHLOROETHYLENE

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
trichloroethylene		KX4550000	79-01-6	
Program Frequency			Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes	
Skin disease	Yes	Annual	Yes	
Hepatitis or jaundice	Yes	Annual	Yes	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes	
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes	
Nausea or vomiting	Yes	Annual	Yes	
Chest pain, angina, heart attack	Yes	Annual	Yes	
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	Yes	
Liver disease	Yes	Annual	Yes	
Kidney disease	Yes	Annual	Yes	
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	Yes	
Work history of:				
Exposure to skin irritants	Yes	Annual	Yes	
Exposure to respiratory irritants	Yes	Annual	Yes	
Exposure to carcinogens	Yes	Annual	Yes	
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	Yes	
Family history of:				
Cancers (leukemia, tumors)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	

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EXAM ELEMENT	BASE	PERI	TERM
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	Yes
AST	*	Annual	Yes
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Cardiology:			
Electrocardiogram	Yes	No	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes
Cardiovascular system	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards, Trichloroethylene, September 2005](#)
2. [OSHA Safety and Health Guideline for Trichloroethylene](#)
3. [ATSDR ToxFAQs— Trichloroethylene, July 2003](#)
4. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Trichloroethylene 1973](#)
5. [EPA Air Toxics Hazard Summary: Trichloroethylene January 2000](#)

REVISED: MARCH 2008

VINYL CHLORIDE ANY EXPOSURE (CHLOROETHENE)

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
vinyl chloride	KU9625000	75-01-4	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Blood transfusions	Yes	Annual	Yes
Skin disease	Yes	Annual	Yes
Peripheral vascular disease	Yes	Annual	Yes
Hepatitis or jaundice	Yes	Annual	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes
Weight loss	Yes	Annual	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Kidney disease	Yes	Annual	Yes
Work history of:			
10 or more years since first exposure to vinyl Chloride	Yes	Annual	Yes
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Annual	Yes
BUN and creatinine	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
GGT	Yes	Annual	Yes
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Central nervous system	Yes	Annual	Yes
Peripheral vascular system (Reynaud's)	Yes	Annual	Yes
Abdomen	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Spleen	Yes	Annual	Yes
Respiratory system	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Physician's/provider's written opinion required	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

This program is for anyone employed in vinyl chloride or polyvinyl chloride manufacturing. Abnormal laboratory test results should be repeated as soon as practicable, preferably within 3-4 weeks. If tests remain abnormal, consideration should be given to removal of the employee from contact with vinyl chloride, while a more comprehensive examination is made.

Review of the medical literature since date of last revision, March 2000, does not reveal any new information with respect to recommendations and procedures for medical surveillance in those exposed to vinyl chloride as part of their occupational duties. There has been some work looking at acute exposure monitoring using urinary thiodiglycolic acid levels¹ but this has not been incorporated into routine monitoring protocols.

REFERENCES:

1. [29 CFR 1910.1017](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10021&p_text_version=FALSE)
2. [29 CFR 1926.1117](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10889) (OSHA construction standard for vinyl chloride exposure)

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3. [29 CFR 1915.1017](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10315) (OSHA shipyard standard for vinyl chloride exposure)
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10315
4. [NIOSH pocket guide to Chemical Hazards](http://www.cdc.gov/niosh/npg/npgd0658.html), <http://www.cdc.gov/niosh/npg/npgd0658.html>
5. Vinyl Chloride Toxicity, in: Case Studies in Environmental Medicine, Agency for Toxic Substances and Disease Registry, Scandinavian Journal Work Environmental Health 1988;14:61-78. 13.
6. Cheng, TJ, Huang, YF, Ma, YC, Urinary thiodiglycolic acid levels for vinyl chloride workers, J. Occup Environ Med, 2001 Nov; 43 (11): 934-8.

REVIEWED: NOVEMBER 2007

VINYL CHLORIDE 10+ YEARS EXPOSURE (CHLOROETHENE)

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
vinyl chloride	KU9625000	75-01-4	
	Program Frequency	Semi-Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Semi-A	Yes
Major illness or injury	Yes	Semi-A	Yes
Hospitalization or surgery	Yes	Semi-A	Yes
Cancer	Yes	Semi-A	Yes
Back injury	Yes	Semi-A	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Semi-A	Yes
Have you ever smoked	Yes	Semi-A	Yes
Do you currently smoke (packs/day)	Yes	Semi-A	Yes
Heart disease, high blood pressure, or stroke	Yes	Semi-A	Yes
Current medication use (prescription or OTC)	Yes	Semi-A	Yes
Medication allergies	Yes	Semi-A	Yes
Any reproductive health concerns	Yes	Semi-A	Yes
Blood transfusions	Yes	Semi-A	Yes
Skin disease	Yes	Semi-A	Yes
Peripheral vascular disease	Yes	Semi-A	Yes
Hepatitis or jaundice	Yes	Semi-A	Yes
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Semi-A	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Semi-A	Yes
Headache, dizziness, light-headedness, weakness	Yes	Semi-A	Yes
Weight loss	Yes	Semi-A	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Semi-A	Yes
Liver disease	Yes	Semi-A	Yes
Kidney disease	Yes	Semi-A	Yes
Work history of:			
10 or more years since first exposure to vinyl Chloride	Yes	Semi-A	Yes
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Semi-A	Yes
Comments on medical history:	Yes	Semi-A	Yes
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	Semi-A	Yes

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EXAM ELEMENT	BASE	PERI	TERM
BUN and creatinine	Yes	Semi-A	Yes
GGT	Yes	Semi-A	Yes
Radiology:			
Chest x-ray (PA)	Yes	No	Yes
Comments on laboratory results:	Yes	Semi-A	Yes
Physical examination:			
Vital signs	Yes	Semi-A	Yes
Special attention in examination to:			
Central nervous system	Yes	Semi-A	Yes
Peripheral vascular system (Reynaud's)	Yes	Semi-A	Yes
Abdomen	Yes	Semi-A	Yes
Liver	Yes	Semi-A	Yes
Spleen	Yes	Semi-A	Yes
Respiratory system	Yes	Semi-A	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Semi-A	Yes
Other appropriate examination (specify)	Yes	Semi-A	Yes
Comments on physical examination:	Yes	Semi-A	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Semi-A	Yes
Physician's/provider's written opinion required	Yes	Semi-A	Yes
Is surveillance/PPE consistent with exposures	Yes	Semi-A	Yes
Are any abnormalities related to exposures/occupations	Yes	Semi-A	Yes
Recommendations:	Yes	Semi-A	Yes

PROGRAM DESCRIPTION:

This program is for anyone employed in vinyl chloride or polyvinyl chloride manufacturing.

Abnormal laboratory test results should be repeated as soon as practicable, preferably within 3-4 weeks. If tests remain abnormal, consideration should be given to removal of the employee from contact with vinyl chloride, while a more comprehensive examination is made.

Review of the medical literature since date of last revision, March 2000, does not reveal any new information with respect to recommendations and procedures for medical surveillance in those exposed to vinyl chloride as part of their occupational duties. There has been some work looking at acute exposure monitoring using urinary thiodiglycolic acid levels but this has not been incorporated into routine monitoring protocols.

REFERENCES:

1. [29 CFR 1910.1017](http://www.osha.gov/pls/oshaweb/owadis.show_document?p_table=STANDARDS&p_id=10021&p_text_version=FALSE)
http://www.osha.gov/pls/oshaweb/owadis.show_document?p_table=STANDARDS&p_id=10021&p_text_version=FALSE,
2. [29 CFR 1926.1117](http://www.osha.gov/pls/oshaweb/owadis.show_document?p_table=STANDARDS&p_id=10889) (OSHA construction standard for vinyl chloride exposure)
http://www.osha.gov/pls/oshaweb/owadis.show_document?p_table=STANDARDS&p_id=10889

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3. [29 CFR 1915.1017](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10315) (OSHA shipyard standard for vinyl chloride exposure)
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10315
4. [NIOSH pocket guide to Chemical Hazards](http://www.cdc.gov/niosh/npg/npgd0658.html), <http://www.cdc.gov/niosh/npg/npgd0658.html>
5. Cheng, TJ, Huang, YF, Ma, YC, Urinary thiodiglycolic acid levels for monomer-exposed polyvinyl chloride workers, J. Occup Environ Med, 2001 Nov; 43 (11): 934-8.

REVIEWED: NOVEMBER 2007

XYLENE

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STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
xylene (o-,m- and p- isomers)	ZE2100000	1330-20-7	
	Program Frequency	Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Hepatitis or jaundice	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Liver disease	Yes	Annual	No
Kidney disease	Yes	Annual	No
Problems with numbness, tingling, weakness	Yes	Annual	No
In hands or feet			
Migraine headache	Yes	Annual	No
Depression, diff concentrating, excessive anxiety	Yes	Annual	No
Work history of:			
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No
AST	*	Annual	No
Urinalysis:			

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EXAM ELEMENT	BASE	PERI	TERM
Routine:			
Urinalysis with microscopic	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

PROGRAM DESCRIPTION:

REFERENCES:

1. Criteria for a Recommended Standard: Occupational Exposure to Xylene 1973 DHHS (NIOSH) Publication No. 75-168: <http://www.cdc.gov/niosh/75-168.html>
2. Key MM et al., (ed.) Occupational Diseases, A guide to Their Recognition, NIOSH, 1977, 243;
3. Federal Register FR 54:2477 29CFR 1910 Air Contaminants, Final Rule 19 JAN 89.

REVISED: DECEMBER 2007

Chapter 5:

C5. Physical Stressors

C5.1. Introduction and Changes

Programs in this section which are based on Navy instructions have those references listed in the program description section. Instructions were current at the time this manual was prepared. However, it is incumbent on the individual user to ensure that current instructions are verified and used.

Individuals are placed on these programs based on recommendations from Industrial Hygiene and Safety or requirements by management.

Where there are stringent requirements for documentation using standard forms, those exams are not duplicated in this document.

All new tests are in bold letters.

The requirement for routine, periodic examinations for the sight conservation was removed from OPNAVINST 5100.23E and the program is removed from the Medical Matrix. The program still exists in PC Matrix for you to use on occasion when you do sight screening examinations.

C5.2. Physical Stressors

Cold

Heat

Noise

Noise Follow-up

Radiation - Ionizing

Radiation - Laser (Class III and IV)

Hand Arm Vibration

Whole Body Vibration

COLD

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STRESSOR(S) IN THIS PROGRAM:

Cold

EXAM ELEMENT	Program Frequency		TERM
	BASE	PERI	
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Bienn	No
Major illness or injury	Yes	Bienn	No
Hospitalization or surgery	Yes	Bienn	No
Cancer	Yes	Bienn	No
Back injury	Yes	Bienn	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Bienn	No
Have you ever smoked	Yes	Bienn	No
Do you currently smoke (packs/day)	Yes	Bienn	No
Do you use smokeless tobacco	Yes	Bienn	No
Heart disease, high blood pressure, or stroke	Yes	Bienn	No
Current medication use (prescription or OTC)	Yes	Bienn	No
Medication allergies	Yes	Bienn	No
Any reproductive health concerns	Yes	Bienn	No
Blood diseases (anemia)	Yes	Bienn	No
Allergies (asthma, hay fever, eczema)	Yes	Bienn	No
Skin disease	Yes	Bienn	No
Peripheral vascular disease	Yes	Bienn	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Bienn	No
Cold injury (frostbite, chill, trench ft, hypothermia)	Yes	Bienn	No
Chest pain, angina, heart attack	Yes	Bienn	No
Repeated episodes of loss of or near loss of consciousness	Yes	Bienn	No
Thyroid disease (heat or cold intolerance)	Yes	Bienn	No
Diabetes or other endocrine gland disorder	Yes	Bienn	No
Mental/emotional illness	Yes	Bienn	No
Comments on medical history:	Yes	Bienn	No
Cardiology:			
Electrocardiogram	***	***	No
Comments on laboratory results:	Yes	Bienn	No
Physical examination:			
Vital signs	Yes	Bienn	No
Special attention in examination to:			
Cardiovascular system	Yes	Bienn	No
Peripheral vascular system (Reynaud's)	Yes	Bienn	No

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EXAM ELEMENT	BASE	PERI	TERM
Respiratory system	Yes	Bienn	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Bienn	No
Thyroid	Yes	Bienn	No
Other appropriate examination (specify)	Yes	Bienn	No
Comments on physical examination:	Yes	Bienn	No
Is surveillance/PPE consistent with exposures	Yes	Bienn	No
Are any abnormalities related to exposures/occupations	Yes	Bienn	No
Recommendations:	Yes	Bienn	No

***An EKG may be indicated in workers when there are cardiovascular risk factors or other indications present.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

A worker should be entered on this program if exposed to temperatures below minus one (-1) degree Centigrade for ten or more days in a quarter or for more than 30 days a year.

The general nutrition status of the individual should be evaluated.

Use of the following medications should be included in the screening; nitrate medications, barbiturates, tranquilizers, vasoactive drugs, and diuretics.

The ACGIH handbook of Threshold Limit Values states: Employees should be excluded from work in cold at (-)1°C (30.2°F) or below if they are suffering from diseases or taking medication which interferes with normal body temperature regulation or reduces tolerance to work in cold environments. Workers who are routinely exposed to temperatures below (-)24°C (-11.2°F) with wind speeds less than five miles per hour, or air temperatures below (-)18°C (0°F) with wind speeds above five miles per hour, should be medically certified as suitable for such exposures.

Trauma sustained in freezing or subzero conditions requires special attention because an injured worker is predisposed to secondary cold injury. Special provision must be made to prevent hypothermia and secondary freezing of damaged tissues in addition to providing for first aid treatment.

REFERENCES:

1. [OSHA Fact Sheet No. 98-55 Protecting Workers in Cold Environments, December 1998](#)
2. [OSHA Emergency Preparedness and Response Guide—Cold Stress, February 2008](#)
3. [OSHA Cold Stress Equation, 1998](#)
4. [NIOSH Safety and Health Topic: Cold Stress, October 2008](#)
5. NEHC-TM-OEM 6260.6A Prevention & Treatment of Heat & Cold Stress Injuries, June 2007
6. Threshold Limit Values and Biological Exposure Limits, Cincinnati, OH: ACGIH; 2003.
7. [Cold Induced Injuries](#), Walter Reed Army Medical Center

HEAT

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STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
Heat	Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Heat injury (cramps, exhaustion, stroke)	Yes	Annual	No	
Exposure (acclimatization) to heat	Yes	Annual	No	
Chest pain, angina, heart attack	Yes	Annual	No	
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No	
Kidney disease	Yes	Annual	No	
Current pregnancy (females only)	Yes	Annual	No	
Infertility or miscarriage (self or spouse)	Yes	Annual	No	
Thyroid disease (heat or cold intolerance)	Yes	Annual	No	
Diabetes or other endocrine gland disorder	Yes	Annual	No	
Mental/emotional illness	Yes	Annual	No	
Work history of:				
Exposure to skin irritants	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Urinalysis:				
Routine:				
Urinalysis without microscopic	Yes	Annual	No	
Cardiology:				
Electrocardiogram	***	***	No	
Comments on laboratory results:	Yes	Annual	No	
Physical examination:				

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EXAM ELEMENT	BASE	PERI	TERM
Vital signs	Yes	Annual	No
Required when positive history questions are obtained	Yes	Annual	No
Special attention in examination to:			
Cardiovascular system	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Skin, with regard to malignant & pre-malignant conditions	Yes	Annual	No
Thyroid	Yes	Annual	No
Obesity	Yes	Annual	No
Overall physical fitness	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

***EKG may be indicated in workers when there are cardiovascular risk factors

PROGRAM DESCRIPTION:

OSHA's Standards Advisory Committee on Heat Stress recommended that a series of work practices, including medical surveillance, be initiated whenever a worker was exposed to temperatures in the workplace (120 minute TWA) that exceeded:

Light work (<200 kcal/h)	30oC (86oF)
Moderate work (200-300 kcal/h)	27.8oC (82oF)
Heavy work (>300 kcal/h)	26.1oC (79oF)

PROVIDER COMMENTS:

In addition to use of anticholinergic drugs, individuals should be screened for use of other medications including; nitrate medications, tricyclic antidepressants, MAO inhibitors, amphetamines, diuretics and antihistamines.

REFERENCES:

1. [NIOSH Criteria for a Recommended Standard: Occupational Exposure to Hot Environments, Revised Criteria, 1986](#)
2. [OSHA Technical Manual 1-0.15A, Chapter 4 Heat Stress, January 1999.](#)
3. Threshold Limit Values and Biological Exposure Limits, Cincinnati, OH: ACIGH 2003
4. [NIOSH: Working in Hot Environments](#)
5. [OSHA Protecting Workers in Hot Environments 1995](#)
6. [OSHA Heat Stress Card, 2002](#)
7. NEHC-TM-OEM 6260.6A Prevention & Treatment of Heat & Cold Stress Injuries, June 2007

8. [Army Heat Injury Prevention Policy, 2007-2009](#)

REVISED: OCTOBER 2009

NOISE

503

STRESSOR(S) IN THIS PROGRAM:		NIOSH #	CAS #	
Noise	Program Frequency		Annual	
	EXAM ELEMENT	BASE	PERI	TERM
	Medical history: have you ever had:			
	Personal history of:			
	Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
	Ringing in the ear (tinnitus)	Yes	Annual	Yes
	Ruptured ear drum	Yes	Annual	Yes
	Loss or change in hearing	Yes	Annual	Yes
	Problem hearing conversations/people	Yes	Annual	Yes
	Recreational/non-occupational exposure to loud noise	Yes	Annual	Yes
	Work history of:			
	Exposure to excessive noise	Yes	Annual	Yes
	Comments on medical history:	Yes	Annual	Yes
	Laboratory:			
	Audiology:			
	Audiogram	Yes	Annual	Yes
	Comments on laboratory results:	Yes	Annual	Yes
	Hearing conservation:			
	Has baseline been reestablished due to PTS?	Yes	Annual	Yes
	High frequency average exceeds 45 db bilaterally?	Yes	Annual	Yes
	Ear plugs fitted and issued?	Yes	Annual	Yes
	Refer to audiologist or physician?	Yes	Annual	Yes
	Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Conductive hearing loss must be ruled out if a significant threshold shift (STS) has been noted.

A tympanogram may be useful in identifying individuals with conductive rather than sensorineural hearing loss. It is strongly recommended that tympanometry be utilized in ruling out conductive hearing loss.

Individuals with a high-frequency average loss greater than 45 dB bilaterally may have problems with speech discrimination.

Individuals are entered on this program based on the results of industrial hygiene surveys. In the absence of IH data, individuals routinely exposed to sound levels greater than 84 dB(A) or 140 dB peak sound pressure level for impact or impulse noise shall be considered at risk and included in the hearing conservation program. Hearing tests are recorded on DD Form 2215 and DD Form 2216.

REFERENCES:

1. OSHA STANDARD [29 CFR 1910.95](#)
2. [OPNAV 5100.23](#) (series), Chapter 18;
3. [OPNAV 5100.19](#) (series), Chapter B4;
4. [DOD INST 6055.12](#), DoD Hearing Conservation Program, March 5, 2004.
5. DODI 6055.05, Table C2.T15, Noise

REVISED: MARCH 2006

STRESSOR(S) IN THIS PROGRAM:

noise

EXAM ELEMENT	Program Frequency	Based on results of annual monitoring		
		BASE	PERI	TERM
Medical history: have you ever had:				
Personal history of:				
Ringing in the ear (tinnitus)			***	
Ruptured ear drum			***	
Loss or change in hearing			***	
Problem hearing conversations/people			***	
Comments on medical history:			***	
Laboratory:				
Audiology:				
Audiogram - follow-up (DD 2216)			***	
Comments on laboratory results:			***	
Physical examination:				
Ears (tympanic membranes)			***	
Other appropriate examination (specify)			***	
Comments on physical examination:			***	
Hearing conservation:				
Has baseline been reestablished due to PTS?			***	
High frequency average exceeds 45 db bilaterally?			***	
Ear plugs fitted and issued?			***	
Refer to audiologist or physician?			***	
Special notations:				
Written notification of permanent threshold shift required			***	
Recommendations:			***	

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***This program is designed for follow up when a significant threshold shift (STS), occurs at the monitoring audiogram.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Hearing test results are documented on DD Form 2215 and DD Form 2216.

Screening tympanometry can be used to determine if the STS has resulted from middle ear pathology.

Individuals with a high-frequency average loss greater than 45 dB bilaterally may have problems with speech discrimination.

Guidelines for follow-up and referral are contained in the NAVOSH Program Manuals listed in the program description.

A sample format for written notification of permanent threshold shift is in [C10.2, Physician's/Provider's Written Opinion Samples](#).

REFERENCES:

1. [OPNAV 5100.23](#) (series), Chapter 18;
2. [OPNAV 5100.19](#) (series), Chapter B4;
3. [29 CFR 1910.95](#);
4. [DOD INST 6055.12](#), DoD Hearing Conservation Program, March 5, 2004;
5. [NEHC Tech Manual 6260.51.99-2 \(Sep 04\)](#)
6. DODI 6055.05, Table C2.T15, Noise

REVISED: MARCH 2006

RADIATION – IONIZING

505

STRESSOR(S) IN THIS PROGRAM:

ionizing radiation

Program Frequency	<50	Every five years
	50-59	Every two years
	>59	Annually

PROGRAM DESCRIPTION:

This program is designated solely to provide guidance on scheduling frequency and references. Tests and forms required are promulgated in: Radiation Health Protection Manual, NAVMED P-5055.

Medical examinations for this program are to be completed using NAVMED 6470/13 VERSION 12/2003.

Only a physician with documented training in the Navy Radiation Health Program will review any medical history or presence of disease states or abnormalities related to a history of occupational exposure to ionizing radiation in excess of that allowed by current directives; history of radiation therapy; and medical conditions which may be associated with exposure to ionizing radiation

REFERENCES:

1. NAVMED P-5055.
2. NAVMED P-117, Chapter 15-104.

REVISED: JANUARY 2009

STRESSOR(S) IN THIS PROGRAM:

laser

EXAM ELEMENT	Program Frequency	Baseline and termination		
		BASE	PERI	TERM
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	No	Yes	
Major illness or injury	Yes	No	Yes	
Hospitalization or surgery	Yes	No	Yes	
Cancer	Yes	No	Yes	
Back injury	Yes	No	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	No	Yes	
Have you ever smoked	Yes	No	Yes	
Do you currently smoke (packs/day)	Yes	No	Yes	
Heart disease, high blood pressure, or stroke	Yes	No	Yes	
Current medication use (prescription or OTC)	Yes	No	Yes	
Medication allergies	Yes	No	Yes	
Any reproductive health concerns	Yes	No	Yes	
Skin disease	Yes	No	Yes	
Change or loss of vision	Yes	No	Yes	
Contact lens use	Yes	No	Yes	
Lens surgery	Yes	No	Yes	
Photosensitizing medications	Yes	No	Yes	
Unusual sensitivity to sunlight	Yes	No	Yes	
Cataracts	Yes	No	Yes	
Eye irritation	Yes	No	Yes	
Eye injury	Yes	No	Yes	
Glaucoma	Yes	No	Yes	
Work history of:		No		
Exposure to non-ionizing radiation (laser, IR, MW, UV)	Yes	No	Yes	
Eye injury	Yes	No	Yes	
Comments on medical history:	Yes	No	Yes	
Laboratory:				
Optometry:				
Date of most recent refraction - when applicable	Yes	No	Yes	
Current refraction prescription - when applicable	Yes	No	Yes	
Vision screen (visual acuity)	Yes	No	Yes	
External ocular and fundus examination	Yes	No	Yes	
Color vision	Yes	No	Yes	
Amsler grid	Yes	No	Yes	

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	No	Yes
Physical examination:			
Vital signs	Yes	No	Yes
Special attention in examination to:			
Eyes	Yes	No	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	No	Yes
Other appropriate examination (specify)	Yes	No	Yes
Comments on physical examination:	Yes	No	Yes
Is surveillance/PPE consistent with exposures	Yes	No	Yes
Are any abnormalities related to exposures/occupations	Yes	No	Yes
Recommendations:	Yes	No	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Enrollment in this program is limited to those personnel who are clearly at risk from exposure to laser radiations.

The preplacement examination must be performed before assignment involving risk of exposure to class 3b or 4 lasers and establishes a baseline for comparison and measurement following an accidental exposure or ocular damage. Examinations for other purposes that include the required information satisfy the requirements of reference 1. When constrained by ship operations or deployment, perform the examination at the earliest opportunity. Complete the termination examination as soon as practical subsequent to termination of duties involving lasers.

Incidental personnel must have documented in their medical record a visual acuity examination. Incidental personnel are described as those personnel whose work makes it possible, but unlikely, that they will be exposed to sufficient laser energy to damage their eyes.

Preplacement and termination laser examinations may include the following tests as deemed necessary by the medical examiner.

1. Dilated, direct view ophthalmoscopic examinations of the retina and slit lamp examinations of the cornea and lens to describe any pathology or deviation from the normal. Refer any retinal lesions to an ophthalmologist or optometrist for evaluation and photographic documentation.
2. Skin examination if the worker has a history of photosensitivity or works with UV lasers.

REFERENCES:

1. [BUMEDINST 6470.23](#) Medical Management of Non-ionizing Radiation Casualties.
2. ANSI Z136.1 of 2007, Appendix E;
3. [OPNAVINST 5100.23](#) (current series).

REVISED: OCTOBER 2009

VIBRATION, HAND-ARM

STRESSOR(S) IN THIS PROGRAM:

hand-arm (segmental) vibration

	Program Frequency	Annual		
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No	
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Do you use smokeless tobacco	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Peripheral vascular disease	Yes	Annual	No	
Cold injury (frostbite, chill, trench ft, hypothermia)	Yes	Annual	No	
Neuro disorder, gait change, paresthesia, coord loss	Yes	Annual	No	
Diabetes or other endocrine gland disorder	Yes	Annual	No	
Vibration white finger disease	Yes	Annual	No	
Work history of:				
Exposure to vibration (segmental or whole body)	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Physical examination:				
Vital signs	Yes	Annual	No	
Special attention in examination to:				
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No	
Back & musculoskeletal system	Yes	Annual	No	
Peripheral vascular system (Reynaud's)	Yes	Annual	No	
Eyes	Yes	Annual	No	
Other appropriate examination (specify)	Yes	Annual	No	
Comments on physical examination:	Yes	Annual	No	
Is surveillance/PPE consistent with exposures	Yes	Annual	No	
Are any abnormalities related to exposures/occupations	Yes	Annual	No	
Recommendations:	Yes	Annual	No	

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Smoking plays a significant role in the development of hand-arm vibration syndrome (HAVS). Individuals who smoke should be counseled in smoking cessation.

Symptoms of peripheral vascular and neurological disease can be documented using a standard staging system so as to provide a quantitative description of the involvement of the vascular/neurological system. Workers in stage 2 HAVS or above on the Stockholm Workshop classification scale should be considered for removal from exposure until signs and symptoms no longer meet the criteria for stage 1. If HAVS is permitted to progress beyond Stage 2 by the continued use of vibrating tools, the effects can become irreversible (NIOSH p. 85).

The Stockholm Workshop classification scale for cold-induced peripheral vascular symptoms in the hand-arm vibration syndrome.*,+

STAGE	DESCRIPTION
0	No attacks
1 mild	Occasional attacks that affect only the tips of one or more fingers
2 moderate	Occasional attacks that affect the distal and middle (rarely also proximal) phalanges of one or more fingers
3 severe	Frequent attacks affecting all phalanges of most fingers
4 very severe	As in stage 3, with trophic skin changes in the finger tips

The Stockholm Workshop classification scale for sensorineural stages of the hand-arm vibration syndrome.*,+

STAGE	DESCRIPTION
OSN	Exposed to vibration but no symptoms
1SN	Intermittent numbness with or without tingling
2SN	Intermittent or persistent numbness, reduced sensory perception
3SN	Intermittent or persistent numbness, reduced tactile discrimination and/or manipulative dexterity

*Adapted from Brammer et al. (1987)

+The stage is determined separately for each hand.

Source: NIOSH Criteria for a Recommended Standard. Occupational Exposure to Hand-Arm Vibration, National Institute for Occupational Safety and Health, Sept 1989.

REFERENCES:

1. [Criteria for a recommended standard: Occupational Exposure to Hand-Arm Vibration, NIOSH Sept 1989,](#)
2. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. ACGIH, current edition.
3. Mansfield, Neil J. Human Response to Vibration. [ACGIH](#): 2004; ISBN: 0-415-28238-X.

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4. Wasserman, Donald E & Pelmeur, P.L. Hand-Arm Vibration: A comprehensive guide for occupational health professionals. 2nd edition: OEM Press: 1998.
5. ISO 5349. Mechanical vibration—Measurement and evaluation of human exposure to hand-transmitted vibration.
6. [Hand Arm Vibration Threshold Limits, DoD Ergonomics Working Group News, Issue 55, August 2006.](#)

REVISED: OCTOBER 2006

WHOLE BODY VIBRATION

STRESSOR(S) IN THIS PROGRAM:

whole body vibration

EXAM ELEMENT	Program Frequency		TERM
	BASE	PERI	
Medical history: have you ever had:		Annual	
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Peripheral vascular disease	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Nausea or vomiting	Yes	Annual	No
Change or loss of vision	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	No
Kidney disease	Yes	Annual	No
Problems with urination/blood in urine	Yes	Annual	No
Current pregnancy (self or spouse)	Yes	Annual	No
Infertility or miscarriage (self or spouse)	Yes	Annual	No
Vibration white finger disease	Yes	Annual	No
Work history of:			
Exposure to vibration (segmental or whole body)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Annual	No
Comments on laboratory results	Yes	Annual	No
Physical examination:			

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EXAM ELEMENT	BASE	PERI	TERM
Vital signs	Yes	Annual	No
Special attention in examination to:			
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Back & musculoskeletal system	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Peripheral vascular system (Reynaud's)	Yes	Annual	No
Varicose veins of lower extremities	Yes	Annual	No
Eyes	Yes	Annual	No
Abdomen	Yes	Annual	No
Genitourinary tract	Yes	Annual	No
Hemorrhoids	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. Seidel H., Heide R., Long-term effects of whole-body vibration; a critical survey of the literature, International Archives of Occupational Environmental Health, 1986:58:1-12.
2. Mansfield, Neil J. Human Response to Vibration. [ACGIH](#): 2004; ISBN: 0-415-28238-X.
3. [Documentation of the threshold limit values for physical agents, 7th Ed.](#) ACGIH: 2001; Publication #0100DocP/A; ISBN: 978-1-882417-43-8.
4. ANSI S3.18-1979 (R 1993) American National Standard Guide for the Evaluation of Human Exposure to Whole-Body Vibration.
5. Navy Safety Center: [Acquisition safety vibration website](#).

REVISED: OCTOBER 2006

Chapter 6:

C6. Mixed Exposures

C6.1. Introduction and Changes

Mixed exposures were included in a separate section to give guidance for screening individuals who may be exposed to a category of chemicals or whose specific exposure may not be known. For a mixed chemical exposure such as mixed solvents, the worker is generally placed into this program when quantitative data on specific exposures are unknown. In some cases, it may be appropriate to use this program if there are quantitative data showing overexposure to a specific solvent and there is no corresponding matrix program for that solvent.

For example, a spray painter may be exposed to multiple solvents. IH data could demonstrate overexposure to one solvent out of the mixture for which there is no corresponding matrix program. In this case, the toxicity of the specific solvent should be reviewed by an occupational medicine specialist to see if the mixed solvent program needs to be modified. When IH data are available and there is a corresponding matrix program available for that chemical, then workers should be entered in the appropriate program for the specific stressor. Occupational health staff should forward a request for review of a new program to the Matrix Committee (see [C10.1, Suggested or Requested Changes in the Medical Matrix](#)) for any stressor where IH data has indicated an overexposure requiring medical surveillance and no matrix program exists for that stressor.

All new tests are printed in bold letters.

Mixed Exposures

Acid/Alkali (pH <4.0 or >11.0)

Anesthetic Gases

Animal Associated Diseases

Hazardous Drugs

Herbicides

Manmade Mineral Fibers

Metal Fumes

Metalworking Fluids

Mixed Solvents (Volatile Organic Compounds)

Organophosphate/Carbamate Compounds

Wood Dust

ACID/ALKALI (PH<4.0/PH>11.0)

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STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #	
Strong acid and base			
See Chemical Stressors List for additional compounds			
Program Frequency		Annual	
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Peripheral vascular disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Contact lens use	Yes	Annual	No
Eye irritation	Yes	Annual	No
Eye injury	Yes	Annual	No
Tooth or gum disease	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Work history of:			
Exposure to hydrogen fluoride or inorganic fluorides	Yes	Annual	No
Eye injury	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Peripheral vascular system (Reynaud's)	Yes	Annual	No
Eyes	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Gums (e.g. lead lines?)	Yes	Annual	No
Teeth (acid erosion)	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PELs exist for numerous acids and alkalis. Chronic or repeated exposure to acid has been associated with fluorosis, mottling of the teeth, weight loss, malaise, anemia, leukopenia, discoloration of teeth, osteosclerosis, skeletal changes such as increased bone density of the spine and pelvis, calcification of ligaments, hyperostosis, and liver or kidney damage

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards](#)
2. [29 CFR 1910.1025 App C Medical surveillance guidelines](#)
3. [ATSDR ToxFAQs—Sulfuric Acid, June 1999](#)
4. [NIOSH Criteria Documents, Criteria Documents Index](#)

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ANESTHETIC GASES

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
halothane	KH6550000	151-67-7
nitrous oxide	QX1350000	10024-97-2
isoflurane		26675-46-7
enflurane		13838-16-9
sevoflurane		28523-86-6

See [Chemical Stressors List](#) for additional compounds

EXAM ELEMENT	Program Frequency	BASE	PERI	TERM
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Annual	Yes	Annual	Yes
Major illness or injury	Annual	Yes	Annual	Yes
Hospitalization or surgery	Annual	Yes	Annual	Yes
Cancer	Annual	Yes	Annual	Yes
Back injury	Annual	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Annual	Yes	Annual	Yes
Have you ever smoked	Annual	Yes	Annual	Yes
Do you currently smoke (packs/day)	Annual	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Annual	Yes	Annual	Yes
Current medication use (prescription or OTC)	Annual	Yes	Annual	Yes
Medication allergies	Annual	Yes	Annual	Yes
Any reproductive health concerns	Annual	Yes	Annual	Yes
Hepatitis or jaundice	Annual	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Annual	Yes	Annual	Yes
Headache, dizziness, light-headedness, weakness	Annual	Yes	Annual	Yes
Liver disease	Annual	Yes	Annual	Yes
Kidney disease	Annual	Yes	Annual	Yes
Current pregnancy (self or spouse)	Annual	Yes	Annual	Yes
Impotence or sexual dysfunction	Annual	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Annual	Yes	Annual	Yes
Epilepsy (seizure disorder)	Annual	Yes	Annual	Yes
Problems with numbness, tingling, weakness, In hands or feet	Annual	Yes	Annual	Yes
Migraine headache	Annual	Yes	Annual	Yes
Mental/emotional illness	Annual	Yes	Annual	Yes
Depression, diff concentrating, excessive anxiety	Annual	Yes	Annual	Yes
Personality change	Annual	Yes	Annual	Yes
Work history of:				
Exposure to chemotherapeutic agents	Annual	Yes	Annual	Yes
Exposure to anesthetic gases	Annual	Yes	Annual	Yes

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EXAM ELEMENT	BASE	PERI	TERM
Exposure to ethylene oxide	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Blood diseases (anemia)	Yes	Annual	Yes
Genetic disease (including children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Physical examination:			
Required when positive history questions are obtained:			
Vital signs	Yes	***	Yes
Special attention in examination to:			
Central nervous system	Yes	***	Yes
Peripheral nervous system (strength, sensation, DTR)	Yes	***	Yes
Genitourinary tract	Yes	***	Yes
Testes (male)	Yes	***	Yes
Liver	Yes	***	Yes
Mucous membranes	Yes	***	Yes
Other appropriate examination (specify)	Yes	***	Yes
Comments on physical examination:	Yes	***	Yes
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	Yes
Substance(s) suspected human mutagenic/fetotoxic effects	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

***Physical exam elements are given when positive answers on history questions are obtained.

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Criteria For a Recommended Standard Occupational Exposure to Waste Anesthetic Gases and Vapors.](#)
2. Williams, Louise A., Reproductive Health Hazards in the Workplace, J.B. Lippincott Company, Philadelphia, 1988;
3. Greenberg MI, Hamilton RW, Phillips, SD; Occupational, Industrial and Environmental Toxicology, Mosby St. Louis, 1997;
4. Suruda, A, Health Effects of Anesthetic Gases, Occupational Medicine State of the Art Reviews, Vol. 12/No. 4, Oct-Dec 1997, Hanley & Belfus, Inc., Philadelphia.
5. Halothane Hepatotoxicity, 2004, (<http://www.emedicine.com/med/topic942.htm>)
6. Haz-Map [Halothane, National Library of Medicine](#)
7. [Waste anesthetic gases, National Library of Medicine](#)

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8. [OSHA Anesthetic Gases: Guidelines for Workplace Exposures](#)

REVISED: JULY 2008

ANIMAL ASSOCIATED DISEASE

STRESSOR(S) IN THIS PROGRAM:

animal associated disease

EXAM ELEMENT	Program Frequency		TERM
	BASE	PERI	
Medical history: have you ever had:		Annual	
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	***	No
Major illness or injury	Yes	***	No
Hospitalization or surgery	Yes	***	No
Cancer	Yes	***	No
Back injury	Yes	***	No
Do you drink 6 or more drinks per week	Yes	***	No
Have you ever smoked	Yes	***	No
Do you currently smoke (packs/day)	Yes	***	No
Heart disease, high blood pressure, or stroke	Yes	***	No
Current medication use (prescription or OTC)	Yes	***	No
Medication allergies	Yes	***	No
Any reproductive health concerns	Yes	***	No
Allergies (asthma, hay fever, eczema)	Yes	***	No
Skin disease	Yes	***	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	***	No
Current pregnancy (self or spouse)	Yes	***	No
Comments on medical history:	Yes	***	No
Laboratory:			
Additional lab tests:			
Tuberculosis screen	Yes	***	No
Comments on laboratory results:	Yes	***	No
Physical examination:			
Vital signs	Yes	***	No
Other appropriate examination (specify)	Yes	***	No
Comments on physical examination:	Yes	***	No
Qualifications:			
Current immunizations	Yes	***	No
Is surveillance/PPE consistent with exposures	Yes	***	No
Are any abnormalities related to exposures/occupations	Yes	***	No
Recommendations:	Yes	***	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

This surveillance category includes workers in a wide variety of settings with potential exposure to animals which may cause disease. Exposure may involve the direct care of or contact with animals (live or sacrificed) or their living quarters, viable tissues, body fluids or wastes. Exposures include laboratory animals, animal pests, and livestock.

Illnesses fall largely into one of two groups: sensitization and infectious. Infectious agents of concern can include anthrax, brucellosis, leptospirosis, ornithosis, Q-fever, toxoplasmosis, rabies, and Hantavirus.

Because of the variety of potential exposures and the specific nature of their effects, pre-placement and annual medical surveillance elements must be individualized. Placement in this surveillance program should not be driven by job title but by identified exposures, or potential exposures, to specific animal associated disease.

General Guidelines:

- A. In addition to exposure-appropriate history, physical examination, and laboratory testing, the worker should be evaluated regarding his/her understanding of the exposures, their potential health effects, and symptoms which should prompt medical attention.
- B. The issue of obtaining and freezing serum from each worker at the time of preplacement examination and periodically thereafter is controversial. The decision to maintain stored serum should be individualized based on exposure, clinical necessity, and published guidance. The recommended protocol for workers exposed to Hantavirus, for instance, includes a stored frozen sample.

Examples of individual requirements follow. Local considerations may warrant more comprehensive measures.

Test	RISK CATEGORY		
	1 rodents, rabbits and aquatics	2 cats, dogs, livestock and ferrets	3 nonhuman primates
Tb Screening	B	B	B, q 6mo
Tetanus	B,P	B,P	B, P
Toxoplasmosis Titer (1)		B	
Rabies Prophylaxis (2)		B,P	
Q Fever Titer (3)		B	
Rubeola (4)			B

B=baseline examination; P=periodic examination

(For pathology personnel, the highest category of animal examined applies.)

- (1) Women of child-bearing age who are occupationally exposed to cats and/or their waste should be screened for toxoplasmosis and receive appropriate health education regarding

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the risk of this disease during pregnancy. Effort should be made to arrange temporary job reassignment while a susceptible employee is pregnant.

- (2) Individuals who should receive pre-exposure prophylaxis with human diploid cell rabies vaccine (HDCV) include those who:
 - a. work directly with rabies virus,
 - b. have direct contact with animals in quarantine,
 - c. have exposure to potentially infected animal body organs or perform post-mortem examinations on animals with a history of poorly defined neurological disorders,
 - d. have responsibility for capturing or destroying wild animals, or
 - e. have large animal (category 2) contact where a potential for exposure exists.
- (3) Employees at risk of exposure to Q fever include those with direct contact with *Coxiella burnetti* and those who handle or use products of parturition (placenta, amniotic fluid, blood or soiled bedding) from infected sheep, goats, or cattle. At the time of the preplacement exam, individual should be assessed for the likelihood of developing chronic sequela of Q fever should they acquire it, (immunosuppressed individuals and those with valvular or congenital heart valve problems).
- (4) Rubeola immunization or documented evidence of immunity or vaccination.

For guidelines on preplacement requirements and periodic medical surveillance for specific animal exposures, contact the Navy and Marine Corps Public Health Center or the nearest Navy Environmental and Preventive Medicine Unit.

ANIMAL-ASSOCIATED DISEASE:	CONSIDER:
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Respiratory hazards from inhaled dusts	Asthma specific screening questionnaire	
Dermatologic hazards	Screen for history of contact dermatitis (irritant, allergic) Screen for dermatophyte infections	
Zoonotic infections (consider screening if known exposure, high risk, or symptomatic)	Anthrax Atypical mycobacterium infections Brucellosis Capnocytophaga Cat-scratch fever Crimea-Congo hemorrhagic fever Erysipeloid	Glanders Leptospirosis Newcastle disease Orf (Contagious ecthyma) Pasteurellosis Plague Psittacosis Rift Valley fever Tularemia

REFERENCES:

1. Garibaldi R, Janis B, Occupational Infections in Rom, William N, Environmental and Occupational Medicine, 2nd ed, Little Brown, 1992.
2. Rivalal JC, Bayer RA, Johnson DK, The NIH animal handlers medical surveillance program. J Occup Med 26(2):115-117, 1984 (Manual revised 1/96).
3. [CDC Human Rabies Prevention – United States, 2008](#)
4. [NASD, Animal Handling Safety Considerations](#)
5. [NIOSH Interim Guidance on Health and Safety Hazards When Working with Displaced Domestic Animals](#)
6. Ladou, 3rd Ed. Pp 287-306.
7. [HAZMAP Rabies](#)
8. [HAZMAP Anthrax](#)
9. [HAZMAP Brucellosis](#)

REVISED: JUNE 2008

HAZARDOUS DRUGS

STRESSOR(S) IN THIS PROGRAM:

antineoplastic drugs (vincristine, dacarbazine, mitomycin, cytosine arabinoside, fluorouracil)

EXAM ELEMENT	Program Frequency		TERM
	BASE	PERI	
Medical history: have you ever had:		Annual	
Personal history of			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes
Major illness or injury	Yes	Annual	Yes
Hospitalization or surgery	Yes	Annual	Yes
Cancer	Yes	Annual	Yes
Back injury	Yes	Annual	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes
Have you ever smoked	Yes	Annual	Yes
Do you currently smoke (packs/day)	Yes	Annual	Yes
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes
Current medication use (prescription or OTC)	Yes	Annual	Yes
Medication allergies	Yes	Annual	Yes
Any reproductive health concerns	Yes	Annual	Yes
Treatment with steroids or cancer (cytotoxic) drugs	Yes	Annual	Yes
Chest pain, angina, heart attack	Yes	Annual	Yes
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	Yes
Liver disease	Yes	Annual	Yes
Current pregnancy (self or spouse)	Yes	Annual	Yes
Infertility or miscarriage (self or spouse)	Yes	Annual	Yes
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	Annual	Yes
Exposure to ionizing radiation	Yes	Annual	Yes
Exposure to skin irritants	Yes	Annual	Yes
Exposure to carcinogens	Yes	Annual	Yes
Family history of:			
Genetic disease (include children)	Yes	Annual	Yes
Cancers (leukemia, tumors)	Yes	Annual	Yes
Comments on medical history:	Yes	Annual	Yes
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
Differential white blood cell count	Yes	Annual	Yes
Urinalysis:			

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EXAM ELEMENT	BASE	PERI	TERM
Routine:			
Urinalysis with microscopic	Yes	Annual	Yes
Additional lab tests:			
Pregnancy testing or laboratory testing of Fertility if requested by employee and deemed Appropriate by the physician	Yes	Annual	Yes
Comments on laboratory results:	Yes	Annual	Yes
Physical examination:			
Vital signs	Yes	Annual	Yes
Special attention in examination to:			
Cardiovascular system	Yes	Annual	Yes
Eyes	Yes	Annual	Yes
Liver	Yes	Annual	Yes
Mucous membranes	Yes	Annual	Yes
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
Skin-with regard to malignant & pre-malignant conditions	Yes	Annual	Yes
Immunocompetence (lymphatic system)	Yes	Annual	Yes
Other appropriate examination (specify)	Yes	Annual	Yes
Comments on physical examination:	Yes	Annual	Yes
Special notations:			
Substance(s) known human carcinogen	Yes	Annual	Yes
Substance(s) known mutagenic or fetotoxic effects	Yes	Annual	Yes
Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
Recommendations:	Yes	Annual	Yes

PROGRAM DESCRIPTION:

REFERENCES:

1. BUMEDINST 6570.3, Hazardous Drugs Safety and Health Plan, 2008
2. [OSHA Technical Manual TED 1-0.15A, Chapter 2 CONTROLLING OCCUPATIONAL EXPOSURE TO HAZARDOUS DRUGS](#)
3. [NIOSH Safety and Health Topic: Occupational Exposure to Antineoplastic Agents, 2008](#)
4. Connor TH, McDiarmid MA. Preventing occupational exposures to antineoplastic drugs in health care settings. CA Cancer J Clin. 2006; 56:354-365.
5. [NIOSH Publication No. 2004-165: Preventing Occupational Exposure to Antineoplastic and Other Hazardous Drugs in Health Care Settings , 2004](#)
6. [OSHA Chemical Sampling Information: Antineoplastic Drugs](#)

REVISED: MAY 2008

HERBICIDES

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
paraquat	DW1960000	4685-14-7
diquat	JM5690000	85-00-7
See Chemical Stressors List for additional compounds		
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No
Comments on laboratory results	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify):	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS: Chronic effects of diquat dibromide are similar to those of paraquat and hence recommendations for paraquat exposure are identical to those for diquat. Chronic exposure to either herbicide causes cataracts in animals; hence visual acuity screening should be evaluated carefully.

REFERENCES:

1. [NIOSH Document: Pocket Guide to Chemical Hazards: Paraquat \(Paraquat dichloride\) | CDC/NIOSH](#)
2. Morgan DP. Recognition and Management of Pesticide Poisonings, Fourth Edition. United States Environmental Protection Agency. 1989:76-82;
3. Klaassen CD, Amdur MO, Doull J. Cassarett And Doull's Toxicology, Third Edition. New York, NY: Macmillan Publishing Co. 1986:556-557;
4. Keifer, MC, Human Health Effects of Pesticides, Occupational Medicine State of the Art Reviews, Volume 12/Number 2, Apr-Jun 1997, Hanley & Belfus, Inc. 5. Stevens, J. T. and Sumner, D. D. Herbicides. In Handbook of Pesticide Toxicology. Hayes, W. J., Jr. and Laws, E. R., Jr., Eds. Academic Press, New York, NY, 1991.10-88

REVISED: OCTOBER 2009

MANMADE MINERAL FIBERS

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
glass wool		
glass filament		
rock wool	PY8070000	
slag wool		
ceramic fiber: Fiberfrax; Fibermax; Fireline Ceramic; Fybex; Man; Nextel; Pkt; Saffil	BD1450000	1302-76-7

Program Frequency

Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor) (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/ day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease			
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Work history of:			
Exposure to dusts (coal, blast, grit, sand, nuisance)	Yes	Annual	No
Exposure to asbestos	Yes	Annual	No
Exposure to silica or sand	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Radiology:			
Chest x-ray (PA)	Yes	q 5 years	
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Special notations:			
Substance(s) suspected human carcinogen	Yes	Annual	No
Is surveillance/PPE consistent with exposures listed on OPNAV 5100/15?	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

REFERENCES:

1. [NIOSH Pocket Guide to Chemical Hazards Mineral Wool fiber, September 2005](#)
2. [OSHA Synthetic Mineral Fibers Health Hazards](#)
3. [NIOSH Update: NIOSH Document on Refractory Ceramic Fibers Provides Thorough Review of Data, Exposure Recommendations, June 2006](#)
4. [ATSDR ToxFAQs—Synthetic Vitreous Fibers, September 2004](#)
5. [ATSDR Toxicological Profile for Synthetic Vitreous Fibers September 2004](#)
6. [EPA: Integrated Risk Information System Refractory ceramic fibers, 1992](#)
7. [NIOSH Criteria Documents, Criteria for a Recommended Standard: Occupational Exposure to Fibrous Glass, 1977](#)
8. Marsh, et al. Mortality among a cohort of US manmade mineral fiber workers: 1985 Follow-up. J Occ Med, Jul 90. Vol.32, 594-604.

REVISED: AUGUST 2008

METAL FUMES

STRESSOR(S) IN THIS PROGRAM:

metal fumes

EXAM ELEMENT	Program Frequency		BASE	PERI	TERM
	Annual				
Medical history: have you ever had:					
Personal history of:					
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	Annual	No
Major illness or injury	Yes	Annual	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	Yes	Annual	No
Cancer	Yes	Annual	Yes	Annual	No
Back injury	Yes	Annual	Yes	Annual	No
Do you drink 6 or more drinks per week	Yes	Annual	Yes	Annual	No
Have you ever smoked	Yes	Annual	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	Yes	Annual	No
Medication allergies	Yes	Annual	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes	Annual	No
Skin disease	Yes	Annual	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes	Annual	No
Change or loss of vision	Yes	Annual	Yes	Annual	No
Cataracts	Yes	Annual	Yes	Annual	No
Eye irritation	Yes	Annual	Yes	Annual	No
Eye injury	Yes	Annual	Yes	Annual	No
Perforation of nasal septum	Yes	Annual	Yes	Annual	No
Shortness of breath	Yes	Annual	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	Yes	Annual	No
Kidney disease	Yes	Annual	Yes	Annual	No
Work history of:					
Exposure to lead	Yes	Annual	Yes	Annual	No
Exposure to chromium or chromic acid	Yes	Annual	Yes	Annual	No
Eye injury	Yes	Annual	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	Yes	Annual	No
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	Yes	Annual	No
Comments on medical history:	Yes	Annual	Yes	Annual	No
Laboratory:					
Serum chemistry:					
BUN and creatinine	Yes	Annual	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
AST	Yes	Annual	No
Urinalysis:			
Routine:			
Urinalysis without microscopic	Yes	Annual	No
Radiology:			
Chest x-ray (PA)	Yes	No	No
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

This program is focused toward nonspecific dust, fumes and other irritants as well as potential UV effects experienced by welders. Specific programs in addition to this one will depend on individual exposures and may include; lead, cadmium, chromium, nickel, manganese and others.

REFERENCES:

1. [NIOSH Toxicologic Review of Selected Chemicals - 525--welding](#)
2. [29 CFR 1910 Subpart Q Welding, Cutting, and Brazing](#)
3. [OSHA Standards Welding, Cutting, and Brazing](#)
4. [NIOSH Criteria for a Recommended Standard: Welding, Brazing, and Thermal Cutting.](#)
5. Pierce JO. Metal Fume Fever. In: Parmeggiani L, ed. Encyclopedia of Occupational Health and Safety, volume 2. Third Edition, Geneva: International Labor Office, 1983:1339-1340.
6. NOTE: References for specific metals are listed in the appropriate programs.

REVISED: DECEMBER 2008

METALWORKING FLUIDS

STRESSOR(S) IN THIS PROGRAM:

metalworking fluids

EXAM ELEMENT	Program Frequency		BASE	PERI	TERM
		Annual			
Medical history: have you ever had:					
Personal history of:					
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	Annual	No
Major illness or injury	Yes	Annual	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	Yes	Annual	No
Cancer	Yes	Annual	Yes	Annual	No
Back injury	Yes	Annual	Yes	Annual	No
Do you drink 6 or more drinks per week	Yes	Annual	Yes	Annual	No
Have you ever smoked	Yes	Annual	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	Yes	Annual	No
Medication allergies	Yes	Annual	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes	Annual	No
Skin disease	Yes	Annual	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes	Annual	No
Eye irritation	Yes	Annual	Yes	Annual	No
Eye injury	Yes	Annual	Yes	Annual	No
Shortness of breath	Yes	Annual	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	Yes	Annual	No
Pneumonia	Yes	Annual	Yes	Annual	No
Work history of:					
Eye injury	Yes	Annual	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	Yes	Annual	No
Exposure to respiratory irritants	Yes	Annual	Yes	Annual	No
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	Yes	Annual	No
Comments on medical history:	Yes	Annual	Yes	Annual	No
Laboratory:					
Urinalysis:					
Routine:					
Urinalysis with microscopic	Yes	Annual	Yes	Annual	No
Radiology:					
Chest x-ray (PA)	Yes	No	Yes	No	No
Spirometry:					
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	Annual	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Eyes	Yes	Annual	No
Mucous membranes	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

Due to the modest association with prostate cancer, workers exposed to metalworking fluids should be counseled on this risk. However, as the effect requires a latency of greater than 25 years, screening for prostate cancer above the recommendations for the general population may not be warranted (Agalliu, 664-71).

REFERENCES:

1. [NIOSH Safety and Health Topic: Metalworking Fluids, November 2008](#)
2. [NIOSH METALWORKING FLUIDS \(MWF\) ALL CATEGORIES, 2003](#)
3. [NIOSH: What You Need to Know About Occupational Exposure to Metalworking Fluids, 1998](#)
4. [NIOSH Criteria for a Recommend Standard Occupational Exposure to Metalworking Fluids.](#)
5. [OSHA Metalworking Fluids: Safety and Health Best Practices Manual, 1999](#)
6. [Federal Registers 61:45459-45460 Occupational Exposure to Metalworking Fluids 1996](#)
7. Agalliu I, Kriebel D, Quinn MM, Wegman DH, Eisen, EA. Prostate cancer incidence in relation to time windows of exposure to metalworking fluids in the auto industry. *Epidemiology*. 2005 Sep;16(5): 664-71.

REVISED: DECEMBER 2008

MIXED SOLVENTS (VOLATILE ORGANIC COMPOUNDS)

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STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
cyclohexanone	GW1050000	108-94-1
glycol ethers (other than ethoxy and methoxy)		
hexone (methyl isobutyl ketone)	SA9275000	108-10-1
methyl n-amyl ketone	MJ5075000	110-43-0
2-pentanone (methyl propyl ketone)	SA7875000	107-87-9
See Chemical Stressors List for additional compounds		
Program Frequency		Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Hepatitis or jaundice	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Headache, dizziness, light-headedness, weakness	Yes	Annual	No
Contact lens use	Yes	Annual	No
Eye irritation	Yes	Annual	No
Eye injury	Yes	Annual	No
Liver disease	Yes	Annual	No
Kidney disease	Yes	Annual	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	No
Depression, diff concentrating, excessive anxiety	Yes	Annual	No
Personality change	Yes	Annual	No
Work history of:			
Eye injury	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Exposure to solvents (MEK, PERC, TCE, toluene...)	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	No
BUN and creatinine	Yes	Annual	No
AST	*	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Eyes	Yes	Annual	No
Liver	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

*AST for baseline is included in baseline liver profile. Only AST is required on annual basis.
 When industrial hygiene data document exposure to specific stressors, i.e., lead or chromium, individuals should be entered on the appropriate programs for specific stressors.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

If IH data show exposure to a specific solvent that does not have a corresponding matrix program, placement into program 603 may be done after a review of the toxicity of the solvent. (See Introduction, Mixed Exposures section.)

REFERENCES:

1. [NIOSH Current Intelligence Bulletin 48: Organic Solvent Neurotoxicity. U.S. Department of Health and Human Services; 1987. DHHS \(NIOSH\) Publication No. 87-104. http://www.cdc.gov/niosh/87104_48.html.](http://www.cdc.gov/niosh/87104_48.html)
2. NOTE: References for specific solvents are listed in the appropriate programs.

REVISED: NOVEMBER 2008

ORGANOPHOSPHATE/CARBAMATE COMPOUNDS

(ACETYLCHOLINESTERASE INHIBITORS)

STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
carbaryl	FC5950000	63-25-2
malathion	WM8400000	121-75-5
methyl parathion	TG0175000	298-00-0
parathion	TF4550000	56-38-2
propoxur	FC3150000	114-26-1

See [Chemical Stressors List](#) for additional compounds

EXAM ELEMENT	Program Frequency	See program description
BASE	PERI	TERM
Medical history: have you ever had:		
Personal history of:		
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual No
Major illness or injury	Yes	Annual No
Hospitalization or surgery	Yes	Annual No
Cancer	Yes	Annual No
Back injury	Yes	Annual No
Do you drink 6 or more drinks per week	Yes	Annual No
Have you ever smoked	Yes	Annual No
Do you currently smoke (packs/day)	Yes	Annual No
Heart disease, high blood pressure, or stroke	Yes	Annual No
Current medication use (prescription or OTC)	Yes	Annual No
Medication allergies	Yes	Annual No
Any reproductive health concerns	Yes	Annual No
Skin disease	Yes	Annual No
Lung or resp disease (COPD, bronchitis, pneumonitis)	Yes	Annual No
Use of anticholinergic drugs (Donnatal)	Yes	Annual No
Headache, dizziness, light-headedness, weakness	Yes	Annual No
Nausea or vomiting	Yes	Annual No
Problems with numbness, tingling, weakness	Yes	Annual No
In hands or feet		
Migraine headache	Yes	Annual No
Comments on medical history:	Yes	Annual No
Work history of:		
Do you handle organophosphate or carbamate pesticides	Yes	Annual No
Laboratory:		
Serum chemistry:		
RBC cholinesterase	Yes	*Quarterly No
Plasma (or serum) cholinesterase	Yes	*Quarterly No

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EXAM ELEMENT	BASE	PERI	TERM
Comments on laboratory results:	Yes	*Quarterly	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	No
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

Personnel should be entered into medical surveillance if they are: exposed to airborne concentrations above the action level for 30 or more days per year; at significant risk of absorption from dermal exposure or ingestion; or performing an operation in an area where a worker has experienced toxicity related to pesticide exposure and exposure controls have not been in place long enough to assess their effectiveness.

* Per Reference 3, cholinesterase levels should be obtained before starting pesticide work/spraying (baseline). A first, in-season, follow-up test should be done at 45-60 days, and quarterly thereafter if spraying continues.

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PROVIDER COMMENTS:

Concerns with any ORGANOPHOSPHATE/CARBAMATE COMPOUNDS should be addressed with the local Industrial Hygienist for specific compound information and requirements.

Serum (or plasma) and red blood cell (RBC) cholinesterase baseline levels should be done at preplacement or before exposure. This baseline value should be the average of two or more tests taken at least 72 hours, but not more than 14 days apart, and analyzed at the same laboratory. If two tests are done and the difference between them exceeds 15%, a third baseline test should be performed. The average of the two closest values should be considered the true baseline value. All baseline tests should be taken when the worker has had no exposure to cholinesterase inhibitors for at least 30 days. Guidance on interpretation is contained in references (1) and (4).

NIOSH recommendations are different from the DoD instruction. NIOSH recommends that cholinesterase levels should be tested in those exposed to organophosphates/carbamate every 4 weeks, except if the exposure is judged to be intense or of long duration. Those employees that are subject to intense exposure should have weekly testing. Those employees exposed to these chemicals for 12 hours a day or more should be tested every 3 weeks.

REFERENCES:

1. National Defense Research Institute: A Review of the Scientific Literature as it Pertains to Gulf War Illnesses, Volume 8--[Chapter 7 Organophosphates and Carbamates](#) , 2005
2. [OPNAVINST 6250.4B, PEST MANAGEMENT PROGRAMS 1998](#)
3. DODI 6055.05-M, C4.6. CHOLINESTERASE
4. [NIOSH Occupational Health Guideline for Parathion](#)

REVISED: JANUARY 2010

WOOD DUST

STRESSOR(S) IN THIS PROGRAM:

softwood dusts
hardwood dusts

EXAM ELEMENT	Program Frequency		TERM
	BASE	PERI	
Medical history: have you ever had:		Annual	
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Allergies (asthma, hay fever, eczema)	Yes	Annual	No
Skin disease	Yes	Annual	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	No
Rhinitis	Yes	Annual	No
Nose bleeds	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Cough (dry or productive)	Yes	Annual	No
Work history of:			
Prior respirator use	Yes	Annual	No
Exposure to dusts (coal, blast, grit, sand, nuisance)	Yes	Annual	No
Exposure to skin irritants	Yes	Annual	No
Exp to respiratory irritants	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Laboratory:			
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	No	No
Comments on laboratory results:	Yes	No	No
Physical examination:			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Nasal mucosa	Yes	Annual	No

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EXAM ELEMENT	BASE	PERI	TERM
Respiratory system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Wood dust has been associated with sinonasal cancer in cohorts of hardwood dust workers.
 Several wood dusts have been associated with asthma and allergic skin responses.

REFERENCES

1. [NIOSH Pocket Guide to Chemical Hazards Wood Dust, September 2005](#)
2. [OSHA Safety and Health Guideline for Wood Dust, All Soft & Hardwoods except Western Red Cedar](#)
3. [OSHA Wood Products: Woodworking eTool - Health Hazards - Wood Dust - Carcinogens](#)
4. [OSHA A Guide for Protecting Workers from Woodworking Hazards, 1999](#)
5. Blot WJ, Chow WH, McLaughlin JK: Wood dust and nasal cancer risk: A review of the evidence from North America. J Occup Environ Med 1997 Feb;39(2):148-56;
6. Demers PA, Teschke K, Kennedy SM: What to do about softwood? A review of respiratory effects and recommendations regarding exposure limits. Am J Ind Med 1997 Apr;31(4):385-398.

REVIEWED: APRIL 2008

Chapter 7:

C7. Specialty Examinations

C7.1. Introduction and Changes

Requirements for performing specialty examinations are included in instructions, Civilian Personnel Instructions and federal and state laws. Instructions, technical manuals and publications used for this edition were current at the time of revision. Users of this manual must ensure that they have most current issue of the appropriate reference.

Every effort was made in preparing this section of the manual to include the minimum examination requirements. Medical personnel will then be able to add tests needed to meet the requirements of local and state law or activity imposed requirements. References or written protocols should be used when adding tests routinely to examinations.

Where there were no specific requirements prohibiting standardization, EKG's and lipid panels were standardized to a baseline and EKG and lipid panel at least once past age 40. After a baseline is established, the EKG and lipid panel are done only once past age 40 unless the provider requests otherwise.

Where strict instructions mandate program documentation, programs are maintained in this manual only for guidance on scheduling and to provide appropriate references. These programs are Aviation, Diver/Hyperbaric Worker, and Submarine Duty.

C7.2. Specialty Examinations

Aviation	Hazardous Waste Workers and Emergency Responders
Barber and Beauty Shop Employees	Health Care Workers (HCWs)
Childcare Worker	Military DOT, Explosive Handler/Operators (Interim Examination)
Department of Transportation (DOT) Vehicle Operators (Civilians)	Motor Vehicle Operator(Other than DOT)
Diver/Hyperbaric Worker	Naval Criminal Investigative Service
Explosives Handlers and Explosive	Police/Guard Security
Firefighter (Annual Screen)	Respiratory User Certification Exam
Firefighter (Preplacement and Periodic)	Submarine Duty
Foodservice Personnel	Vehicle Operators (Civilians)
Forklift Operator	Wastewater/Sewage Worker
Freon Workers (haloalkane)	Weight Handling Equipment Managers

Program Frequency**By Age**

All Naval aviation personnel (officer and enlisted) will undergo a complete aviation medical examination (NAVMED 6120/2 as appropriate) within 30 days of their birthday at ages 21, 24, 27, 30, 33, 36, 39 and annually thereafter.

Air Force aviation personnel will undergo an aviation medical examination according to [AFI 48-101](#) that is available at [Air Force E-Publishing - Home](#). The aviation medical exams listed as Aerospace Medicine.

PRORAM DESCRIPTION:

This program is designed solely to provide guidance in scheduling frequency and references.

Medical examination is recorded on NAVMED 6130/2 (as appropriate). Detailed guidance is contained in [Manual of the Medical Department, NAVMED P-117, Chapter 15, Article 15-65.](#)

PROVIDER COMMENTS:

This exam can only be performed by flight surgeons and BUMED-23 approved medical officers via special credentialing.

Physical exams and standards for aviation physicals are updated annually and available on the Internet at the NOMI home page: [NOMI Library](#)

<http://www.med.navy.mil/sites/navmedmpte/nomi/Pages/NOMILibrary.aspx>

This document contains guidance for Class I, Class II, and Class III and enlisted aviation personnel. It also contains height and weight policies and clearance for non-military personnel to fly in USN/USMC Aircraft.

REFERENCES:

1. BUMEDNOTE 5410 of 14 Oct 99.
2. [Manual of the Medical Department, NAVMED P-117, Chapter 15, Article 15-65.](#)

REVIEWED: SEPTEMBER 2009

BARBER AND BEAUTY SHOP EMPLOYEES

Program Frequency	Preplacement
EXAM ELEMENT	BASELINE
Medical history: have you ever had:	
Personal history of:	
Major illness or injury	Yes
Hospitalization or surgery	Yes
Cancer	Yes
Back injury	Yes
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes
Have you ever smoked	Yes
Do you currently smoke (packs/day)	Yes
Heart disease, high blood pressure, or stroke	Yes
Current medication use (prescription or OTC)	Yes
Medication allergies	Yes
Any reproductive health concerns	Yes
Skin disease	Yes
Hepatitis or jaundice	Yes
Tuberculosis	Yes
Infectious disease	Yes
Chronic abdominal pain, vomiting, other GI symptoms	Yes
Comments on medical history:	Yes
Laboratory:	
Additional lab tests:	
Appropriate by the physician	Yes
Comments on laboratory results:	Yes
Physical examination:	
Vital signs	Yes
Special attention in examination to:	
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes
Other appropriate examination (specify)	Yes
Comments on physical examination:	Yes
Certifications performed IAW: NAVMED P-5010	
Assessment:	Yes
Recommendations:	Yes

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

All barber shop and beauty shop employees, including contract personnel, must be medically screened and determined to be free of communicable disease prior to their initial assignment. Unless necessary for local reasons, there is no requirement for periodic examinations. This screening examination may be performed by non-physician personnel.

REFERENCES:

Manual of Naval Preventive Medicine NAVMED P-5010, Chapter 2.

REVIEWED: AUGUST 2008

CHILD CARE WORKER

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	Program Frequency	Annual		
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Major illness or injury	Yes	Annual	No	
Hospitalization or surgery	Yes	Annual	No	
Cancer	Yes	Annual	No	
Back injury	Yes	Annual	No	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No	
Have you ever smoked	Yes	Annual	No	
Do you currently smoke (packs/day)	Yes	Annual	No	
Heart disease, high blood pressure, or stroke	Yes	Annual	No	
Current medication use (prescription or OTC)	Yes	Annual	No	
Medication allergies	Yes	Annual	No	
Any reproductive health concerns	Yes	Annual	No	
Skin disease	Yes	Annual	No	
Hepatitis or jaundice	Yes	Annual	No	
Tuberculosis	Yes	Annual	No	
Infectious disease	Yes	Annual	No	
History of chicken pox	Yes	Annual	No	
Chronic abdominal pain, vomiting, other GI symptoms	Yes	Annual	No	
Mental/emotional illness	Yes	Annual	No	
Depression, difficulty concentrating, excessive anxiety	Yes	Annual	No	
Treatment for drug or alcohol use	Yes	Annual	No	
Comments on medical history:	Yes	Annual	No	
Laboratory:				
Additional lab tests:				
Tuberculosis screen	Yes	Annual	No	
Comments on laboratory results:	Yes	Annual	No	
Physical examination:				
Vital signs	Yes	Annual	No	
Other appropriate examination (specify)	Yes	Annual	No	
Comments on physical examination:	Yes	Annual	No	
Qualifications:				
Current immunizations	Yes	Annual	No	
Measles/mumps/rubella immune status	Yes	Annual	No	
Varicella immune status	Yes	Annual	No	
Assessment:	Yes	Annual	No	
Recommendations:	Yes	Annual	No	

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

The immunization requirements promulgated by the various references can be summarized as follows:

- A. Immunizations against polio, tetanus, diphtheria and pertussis must be current. On October 26, 2005 the Advisory Committee on Immunization Practices (ACIP) voted to recommend routine use of a single dose of Tetanus, Diphtheria and Pertussis (Tdap) Vaccine for adults 19-64 years of age to replace the next booster dose of tetanus and diphtheria toxoids vaccine (Td). The ACIP also recommended Tdap for adults who have close contact with infants <12 months of age.
- B. Immunity to chickenpox (varicella), measles, mumps and rubella is required. This requirement can be met by documentation of physician-diagnosed illness (except rubella), serologic evidence of immunity, or documented immunization (for measles, 2 doses one month apart after 1 year of age on individuals born on or after 1957 is required).
- C. Specific requirements are outlined in the instructions listed in the program description.
- D. Unusual circumstances such as an outbreak may necessitate additional requirements.
- E. Hepatitis B immunization is recommended by the CDC and is strongly encouraged. If the employee refuses or declines the 3 injection series and/or the testing to ensure immunity a letter of declination must be signed.
- F. Annual influenza immunization is strongly encouraged.

The purpose of the exam is to identify potentially communicable conditions. Scope of the exam would depend on results of the history, local public health requirements and communicable disease risk specific to the area.

For those child care worker applicants without a written record of polio immunization status, attendance at public school in the U.S. is adequate for presumption of prior oral polio vaccine administration.

REFERENCES: (OTHER);

- 1. [OPNAVINST 1700.9 \(current edition\), Child and Youth Programs, July 2008](#)
- 2. [BUMEDINST 6230.15, Immunizations and Chemoprophylaxis, current, 2007](#)
- 3. [CDC Additional Information for Adolescent and Adult Vaccines. Additional information and special considerations about vaccines recommended for anyone 11 years of age and older.](#)

REVIEWED: FEBRAURY 2009

Program Frequency

Diver Candidates	Diving Medical Exam (DME) upon initial application for diving duty.
All Designated Divers	Anniversary periodic DME at their 20 th , 25 th , 30 th , 35 th , 40 th , 45 th , and 50 th birthday. After age 50 DME ANNUALLY.

PROGRAM DESCRIPTION:

This program is designated solely to provide guidance on scheduling frequency. Disqualifying conditions, tests, and forms required are promulgated in [Manual of the Medical Department, NAVMED P-117, Chapter 15](#), Article 15-102, Change 126. SPECWAR and Special Operations personnel are covered by NAVMED P-117, Chapter 15, Article 15-105, Change 126. Tests and forms required are promulgated in Manual of the Medical Department, NAVMED P-117, Chapter 15, Article 15-66, Change 108.

PROVIDER COMMENTS:

The DME will ideally be conducted by an Undersea Medical Officer (UMO) or Diving Medical Officer (DMO). It may be done by any Navy credentialed independent practitioner or physician assistant physician as long as it is reviewed and countersigned by an UMO. In cases where no UMO or DMO is available to review the examination, guidance should be sought from Head Undersea Medicine, BUMED.

Per [OPNAVINST 3150.27B](#), DON civil service employee divers or diver candidates are subject to the same Diving Duty standards: NAVMED P-117, Chapter 15, Article 15-102, Change 126 DME Standards, or latest revision.

Diver candidates (or candidates for advanced diver training) must complete MILPERS 1220 Exhibit 8, U.S. Military Diving Medical Screening Questionnaire.

A full neurological exam must be documented in block 44 of DOD 2808.

Tympanic membrane mobility must be documented in block 72b of DOD 2808.

Annual PHA must document skin cancer screening.

An audiogram is required every 5 years, and if a permanent significant threshold shift (PSTS) occurs, audiology surveillance is required every 2 years.

Divers require Hepatitis A and Hepatitis B immunizations.

REVIEWED: JULY 2008

EXPLOSIVE HANDLER

Program Frequency	By Age
Up to 60 years	Every 5 years
Age 60 and above	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Yes	No
Major illness or injury	Yes	Yes	No
Hospitalization or surgery	Yes	Yes	No
Cancer	Yes	Yes	No
Back injury	Yes	Yes	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Yes	No
Have you ever smoked	Yes	Yes	No
Do you currently smoke (packs/day)	Yes	Yes	No
Heart disease, high blood pressure, or stroke	Yes	Yes	No
Current medication use (prescription or OTC)	Yes	Yes	No
Medication allergies	Yes	Yes	No
Use of seat belts (always, mostly, some, none)	Yes	Yes	No
Any reproductive health concerns	Yes	Yes	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Yes	No
Headache, dizziness, light-headedness, weakness	Yes	Yes	No
Nervous stomach or ulcer	Yes	Yes	No
Head injury	Yes	Yes	No
Change or loss of vision	Yes	Yes	No
Loss or change in hearing	Yes	Yes	No
Chest pain, angina, heart attack	Yes	Yes	No
Repeated episodes of loss of or near loss of consciousness	Yes	Yes	No
Kidney disease	Yes	Yes	No
Epilepsy (seizure disorder)	Yes	Yes	No
Problems with balance and coordination	Yes	Yes	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Yes	No
Migraine headache	Yes	Yes	No
Diabetes or other endocrine gland disorder	Yes	Yes	No
Mental/emotional illness	Yes	Yes	No
Depression, diff concentrating, excessive anxiety	Yes	Yes	No
Treatment for drug or alcohol use	Yes	Yes	No
Personality change	Yes	Yes	No
Muscle or joint problems	Yes	Yes	No

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EXAM ELEMENT	BASE	PERI	TERM
Permanent defect from illness, disease or injury	Yes	Yes	No
Family history of:			
Heart disease, high blood pressure, or stroke	Yes	Yes	No
Comments on medical history:	Yes	Yes	No
Laboratory:			
Hematology:			
Hematocrit	*	*	No
Serum chemistry			
Fasting blood glucose	*	*	No
Lipid profile	**	**	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Yes	No
Cardiology			
Baseline electrocardiogram	**	**	No
Audiology:			
Audiogram	Yes	Yes	No
Optometry:			
Vision screen (visual acuity)	Yes	Yes	No
Color vision	Yes	Yes	No
Visual fields	Yes	Yes	No
Tonometry over age 40 (if clinically indicated)	Yes	Yes	No
Comments on laboratory results:	Yes	Yes	No
Physical examination:			
Vital signs	Yes	Yes	No
Special attention in examination to:			
Central nervous system	Yes	Yes	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Yes	No
Back & musculoskeletal system	Yes	Yes	No
Extremities	Yes	Yes	No
Cardiovascular system	Yes	Yes	No
Peripheral vascular system (Reynaud's)	Yes	Yes	No
Eyes	Yes	Yes	No
Abdomen	Yes	Yes	No
Genitourinary tract	Yes	Yes	No
Respiratory system	Yes	Yes	No
Ears (tympanic membranes)	Yes	Yes	No
Other appropriate examination (specify)	Yes	Yes	No
Comments on physical examination:	Yes	Yes	No
Is surveillance/PPE consistent with exposures	Yes	Yes	No
Are any abnormalities related to exposures/occupations	Yes	Yes	No
Recommendations:	Yes	Yes	No

* See Provider Comments

** EKG/Lipid panel should be done once after age 40.

PROGRAM DESCRIPTION:

Medical examinations of explosive handlers are conducted to ensure those handling explosives are physically qualified. If a complete physical examination is required, then DD 2802 and DD 2807-1 should be used for documentation following the requirements of MANMED.

It is important to note the separation of the two qualifications as Explosive Motor Vehicle Operator and Explosive Handler. Those qualified under the Explosive Motor Vehicle Operator are automatically also qualified as Explosive Handlers. Explosive Handler qualification does not imply qualification for Explosive Motor Vehicle Operator.

Independent Duty Corpsmen operating within the scope of their privileging authority are authorized to certify personnel under this program.

Navy Explosive Ordnance Disposal personnel must also meet the requirements of article 15-66.

PROVIDER COMMENTS:

Hematocrit and fasting blood glucose are not recommended as part of this exam. They were required elements in prior versions of the Matrix Manual. Medical research support for this type of screening on the exam is not strong. Anemia and hypo/hyperglycemia are easily correctable causes of sudden altered consciousness that some on the Medical Matrix Committee feel should be a required test for entry into the program and for periodic review. As always, inclusion of these lab tests is at the local provider's discretion.

REFERENCES:

1. Manual of the Medical Department, U.S. Navy, NAVMED P-117, Chapter 15-107
2. Marine Corps TM 11240-14/3B, Standard Licensing Procedures for Operators of Military Motor Vehicles;
3. DoD 4500.36-R, Management, Acquisition and Use of Motor Vehicles
4. NAVFAC P-300, Management of Civil Engineering Support Equipment, May 97 (https://portal.navy.mil/portal/page/portal/DOCS/DOC_STORE_PUB/P-300.PDF)
5. Hartenbaum, N. The DOT Medical Examination, OEM Press, Boston, MA 1997.
6. NAVSEA OP 5 VOLUME 1, Ammunition and Explosives Safety Ashore

REVISED: OCTOBER 2009

EXPLOSIVES VEHICLE OPERATORS

	Program Frequency	
Civilians, up to 60 years		By Age
Civilians, age 60 and above		Every 2 years
Active duty military personnel		Annual
		Every 5 years

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	By Age	No
Major illness or injury	Yes	By Age	No
Hospitalization or surgery	Yes	By Age	No
Cancer	Yes	By Age	No
Back injury	Yes	By Age	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	By Age	No
Have you ever smoked	Yes	By Age	No
Do you currently smoke (packs/day)	Yes	By Age	No
Heart disease, high blood pressure, or stroke	Yes	By Age	No
Current medication use (prescription or OTC)	Yes	By Age	No
Medication allergies	Yes	By Age	No
Use of seat belts (always, mostly, some, none)	Yes	By Age	No
Any reproductive health concerns	Yes	By Age	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	By Age	No
Headache, dizziness, light-headedness, weakness	Yes	By Age	No
Nervous stomach or ulcer	Yes	By Age	No
Head injury	Yes	By Age	No
Change or loss of vision	Yes	By Age	No
Loss or change in hearing	Yes	By Age	No
Chest pain, angina, heart attack	Yes	By Age	No
Repeated episodes of loss of or near loss of consciousness	Yes	By Age	No
Kidney disease	Yes	By Age	No
Epilepsy (seizure disorder)	Yes	By Age	No
Problems with balance and coordination	Yes	By Age	No
Problems with numbness, tingling, weakness in hands or feet	Yes	By Age	No
Migraine headache	Yes	By Age	No
Diabetes or other endocrine gland disorder	Yes	By Age	No
Mental/emotional illness	Yes	By Age	No
Depression, diff concentrating, excessive anxiety	Yes	By Age	No
Treatment for drug or alcohol use	Yes	By Age	No
Personality change	Yes	By Age	No

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EXAM ELEMENT	BASE	PERI	TERM
Muscle or joint problems	Yes	By Age	No
Permanent defect from illness, disease or injury	Yes	By Age	No
Family history of:			
Heart disease, high blood pressure, or stroke	Yes	By Age	No
Comments on medical history:	Yes	By Age	No
Laboratory:			
Hematology:			
Hematocrit	*	*	No
Serum chemistry			
Fasting blood glucose	*	*	No
Lipid profile	**	**	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	Yes	No
Cardiology			
Baseline electrocardiogram	**	**	No
Audiology:			
Audiogram	Yes	By Age	No
Optometry:			
Vision screen (visual acuity)	Yes	By Age	No
Color vision	Yes	By Age	No
Visual fields	Yes	By Age	No
Tonometry over age 40 (if clinically indicated)	Yes	By Age	No
Comments on laboratory results:	Yes	By Age	No
Physical examination:			
Vital signs	Yes	By Age	No
Special attention in examination to:			
Central nervous system	Yes	By Age	No
Peripheral nervous system (strength, sensation, DTR)	Yes	By Age	No
Back & musculoskeletal system	Yes	By Age	No
Extremities	Yes	By Age	No
Cardiovascular system	Yes	By Age	No
Peripheral vascular system (Reynaud's)	Yes	By Age	No
Eyes	Yes	By Age	No
Abdomen	Yes	By Age	No
Genitourinary tract	Yes	By Age	No
Respiratory system	Yes	By Age	No
Ears (tympanic membranes)	Yes	By Age	No
Other appropriate examination (specify)	Yes	By Age	No
Comments on physical examination:	Yes	By Age	No
Is surveillance/PPE consistent with exposures	Yes	By Age	No
Are any abnormalities related to exposures/occupations	Yes	By Age	No
Recommendations:	Yes	By Age	No

* See Provider Comments

** EKG/Lipid panel should be done once after age 40.

PROGRAM DESCRIPTION:

The purpose of this program, as defined in NAVMED P117 Chapter 15-107, is that medical examinations of explosive and Hazardous Material Vehicle Operators are conducted to ensure employees who handle explosives or operate vehicles or machinery which transport explosive or other hazardous material are physically qualified, equal to the requirements for DOT commercial vehicle drivers.

It is important to note the separation of the two qualifications as Explosive Motor Vehicle Operator and Explosive Handler. Those qualified under the Explosive Motor Vehicle Operator are automatically also qualified as Explosive Handlers. Explosive Handler qualification does not imply qualification for Explosive Motor Vehicle Operator.

Only licensed medical providers can certify this exam.

PROVIDER COMMENTS:

Civilian personnel must meet the general standards for employment as provided by the Office of Personnel Management under reference (7), and the standards for rejection listed in reference (2). Civilian contract carriers need only be qualified per Title 49, CFR, part 391.

Hematocrit and fasting blood glucose are not recommended as part of this exam. They were required elements in prior versions of the Matrix Manual. Medical research support for this type of screening on the exam is not strong. Anemia and hypo/hyperglycemia are easily correctable causes of sudden altered consciousness that some on the Medical Matrix Committee feel should be a required test for entry into the program and for periodic review. As always, inclusion of these lab tests is at the local provider's discretion.

REFERENCES:

1. 49 CFR, part 391;
2. Manual of the Medical Department, U.S. Navy, NAVMED P-117, Current. Chapter 15-107
3. DoD 4500.36-R, Management, Acquisition and Use of Motor Vehicles
4. NAVFAC P-300, Management of Civil Engineering Support Equipment, May 97 (https://portal.navy.mil/portal/page/portal/DOCS/DOC_STORE_PUB/P-300.PDF);
5. NAVSEA OP 5 VOLUME 1, Ammunition and Explosives Safety Ashore
6. Marine Corps TM 11240-14/3B, Standard Licensing Procedures for Operators of Military Motor Vehicles
7. 5 CFR 930.108, OPM Periodic Medical Examination
8. Hartenbaum, N. The DOT Medical Examination, OEM Press, Boston, MA 1997.

REVISED: 10/2009

Program Frequency	Annual
EXAM ELEMENT	PERIODIC
Medical history: have you ever had:	
Personal history of:	
Is your work exposure history current (OPNAV 5100/15)	Annual
Major illness or injury	Annual
Hospitalization or surgery	Annual
Cancer	Annual
Back injury	Annual
Do you drink 6 or more drinks per week (beer, wine, liquor)	Annual
Have you ever smoked	Annual
Do you currently smoke (packs/day)	Annual
Heart disease, high blood pressure, or stroke	Annual
Current medication use (prescription or OTC)	Annual
Medication allergies	Annual
Any reproductive health concerns	Annual
Blood diseases (anemia)	Annual
Allergies (asthma, hay fever, eczema)	Annual
Skin disease	Annual
Heat injury (cramps, exhaustion, stroke)	Annual
Peripheral vascular disease	Annual
Hepatitis or jaundice	Annual
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Annual
Tuberculosis	Annual
Headache, dizziness, light-headedness, weakness	Annual
Change or loss of vision	Annual
Loss or change in hearing	Annual
Chest pain, angina, heart attack	Annual
Repeated episodes of loss of or near loss of consciousness	Annual
Shortness of breath	Annual
Chronic abdominal pain, vomiting, other GI symptoms	Annual
Current pregnancy (females only)	Annual
Epilepsy (seizure disorder)	Annual
Problems with balance & coordination	Annual
Problems with numbness, tingling, weakness in	Annual
Hands or feet	
Thyroid disease (heat or cold intolerance)	Annual
Mental/emotional illness	Annual
Muscle or joint problems	Annual
Work history of:	
Exposure to potentially infectious body fluids	Annual
Comments on medical history:	Annual
Laboratory:	

EXAM ELEMENT	PERIODIC
Additional lab tests:	
Tuberculosis screen	Annual
Optometry:	
Vision screen (visual acuity)	Annual
Color vision	Annual
Comments on laboratory results:	Annual
Physical examination:	
Vital signs	Annual
Height	Annual
Weight	Annual
Other appropriate examination (specify)	Annual
Comments on physical examination:	Annual
Special requirements:	
Qualifications:	
Current immunizations	Annual
Is hepatitis B vaccine series complete or prior infection documented?	Annual
Is surveillance/PPE consistent with exposures	Annual
Are any abnormalities related to exposures/occupations	Annual
Recommendations:	Annual

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Program 707 provides preplacement and periodic medical examination guidelines. Program 722 is used as an annual screen when the required periodic examination, Program 707, is not due. The extent of the medical evaluation and additional testing should be based on the firefighter's medical condition.

Reference (2) mandates the medical and physical criteria listed in references (3), (4) and (5). Reference (2) mandates that all personnel will participate in a physical fitness exercise program and shall be a special emphasis target group for DoD Components anti-smoking education programs.

REFERENCES:

1. Qualification Standards, Fire Protection and Prevention Series, GS-081, July 1993.
2. DODINST 6055.6 DoD Fire and Emergency Services Program, 15 DEC 94.
3. National Fire Fighters Protection Association, (NFPA) Standard on Fire Department Safety and Occupational Health (NFPA 1500), 1997 Edition.
4. NFPA Standard on Medical Requirements for Fire Fighters, (NFPA 1582), 1997 Edition.
5. NFPA Standard on Fire Department Infection Control Plan, (NFPA 1581), 1997 Edition.
6. OSHA Standard 29 CFR 1910.1030.

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7. Orris, Peter, Melius, James and Duffy, RM, Occupational Medicine: State of the Air Review Firefighters' Safety and Health, Volume 10/Number 14, Hanley & Belfus, Inc., Philadelphia, PA.

References (2) and (4) contain conditions, by category, which are considered medically disqualifying. NOTE: The guidance in 5 CFR Part 339, "Medical Qualification Determinations", must be consulted on all civilian employees in whom there is a question of worker fitness. The presence of a medically disqualifying condition does not automatically preclude continued work. This decision should be made by management with input from Occupational Medicine, Human Resources Office and possibly the worker's personal physician.

Reference (6) considers public safety workers, policemen and Firefighters at risk for exposure to blood borne pathogens. This risk is not universal since duties vary greatly between departments and locations. The purpose of requiring assessment of hepatitis B immune status is to determine the extent of potential exposure. Those who are felt to be at risk may be placed in Program 178, Blood and/or Body Fluids.

REVISED: 3/2000

FIREFIGHTER (PREPLACEMENT AND PERIODIC)

Program Frequency	By Age
29 and under	Every three years
30-39	Every two years
40 and over	Every year

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	By Age	***
Major illness or injury	Yes	By Age	***
Hospitalization or surgery	Yes	By Age	***
Cancer	Yes	By Age	***
Back injury	Yes	By Age	***
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	By Age	***
Have you ever smoked	Yes	By Age	***
Do you currently smoke (packs/day)	Yes	By Age	***
Heart disease, high blood pressure, or stroke	Yes	By Age	***
Current medication use (prescription or OTC)	Yes	By Age	***
Medication allergies	Yes	By Age	***
Any reproductive health concerns	Yes	By Age	***
Blood diseases (anemia)	Yes	By Age	***
Allergies (asthma, hay fever, eczema)	Yes	By Age	***
Skin disease	Yes	By Age	***
Heat injury (cramps, exhaustion, stroke)	Yes	By Age	***
Peripheral vascular disease	Yes	By Age	***
Hepatitis or jaundice	Yes	By Age	***
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	By Age	***
Tuberculosis	Yes	By Age	***
Headache, dizziness, light-headedness, weakness	Yes	By Age	***
Change or loss of vision	Yes	By Age	***
Loss or change in hearing	Yes	By Age	***
Chest pain, angina, heart attack	Yes	By Age	***
Repeated episodes of loss of or near loss of consciousness	Yes	By Age	***
Shortness of breath	Yes	By Age	***
Chronic abdominal pain, vomiting, other GI symptoms	Yes	By Age	***
Current pregnancy (females only)	Yes	By Age	***
Epilepsy (seizure disorder)	Yes	By Age	***
Problems with balance & coordination	Yes	By Age	***

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EXAM ELEMENT	BASE	PERI	TERM
Problems with numbness, tingling, weakness in hands or feet	Yes	By Age	***
Thyroid disease (heat or cold intolerance)	Yes	By Age	***
Mental/emotional illness	Yes	By Age	***
Muscle or joint problems	Yes	By Age	***
Work history of:			
Exposure to potentially infectious body fluids	Yes	By Age	***
Comments on medical history:	Yes	By Age	***
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	By Age	***
Serum chemistry:			
Liver profile to include:			
AST , Total Bilirubin, alkaline phosphatase	Yes	No	***
BUN and creatinine	Yes	By Age	***
Baseline lipid profile	Yes	No	No
AST	Yes	By Age	***
Urinalysis:			
Routine:			
Urinalysis without microscopic	Yes	By Age	***
Additional lab tests:			
Tuberculosis screen	Yes	Annual	***
EKG/lipid profile done once past age 40?	No	*	***
Cardiology:			
Baseline electrocardiogram	Yes	No	No
Audiology:			
Audiogram	Yes	By Age	***
Radiology:			
Chest x-ray (pa)	Yes	**	**
Spirometry:			
Spirometry (FVC, FEV1, FEV1/FVC)	Yes	By Age	***
Optometry:			
Vision screen (visual acuity)	Yes	By Age	***
Color vision	Yes	By Age	***
Peripheral vision	Yes	By Age	***
Comments on laboratory results:	Yes	By Age	***
Physical examination:			
Vital signs	Yes	By Age	***
Special attention in examination to:			
Central nervous system	Yes	By Age	***
Peripheral nervous system (strength, sensation, DTR)	Yes	By Age	***
Back & musculoskeletal system	Yes	By Age	***
Cardiovascular system	Yes	By Age	***
Eyes	Yes	By Age	***

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EXAM ELEMENT	BASE	PERI	TERM
Genitourinary tract	Yes	By Age	***
Liver	Yes	By Age	***
Respiratory system	Yes	By Age	***
Ears (tympanic membranes)	Yes	By Age	***
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	By Age	***
Thyroid	Yes	By Age	***
Metabolic disturbance (fever, tachycardia)	Yes	By Age	***
Overall physical fitness	Yes	By Age	***
Other appropriate examination (specify)	Yes	By Age	***
Comments on physical examination:	Yes	By Age	***
Special requirements:			
Qualifications:			
Current immunizations	Yes	By Age	No
Is hepatitis b vaccine series complete or prior infection documented?	Yes	By Age	No
Is surveillance/PPE consistent with exposures	Yes	By Age	***
Are any abnormalities related to exposures/occupations	Yes	By Age	***
Recommendations:	Yes	By Age	***

* EKG/Lipid panel should be done once after age 40. The purpose of this program, as defined in Manual of the Medical Department (MANMED), is that medical examinations of explosive handlers and Hazardous Material Vehicle Operators are conducted to ensure employees who handle explosives or operate vehicles or machinery which transport explosive or other hazardous material are physically qualified. A separate program is for military members.

**Chest x-ray is not required and should be requested at the discretion of the provider.

***Workers who have not had an examination within 12 months should have a termination examination.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Program 707 provides guidelines for preplacement and periodic medical examinations. Program 722 provides guidelines for the annual medical evaluation, a medical screen to be done when the required periodic examination, Program 707, is not due. The extent of the medical evaluation and additional testing will depend on the firefighter’s medical condition.

Reference (2) mandates the medical and physical criteria listed in references (3), (4) and (5).

Reference (2) mandates that all personnel will participate in a physical fitness exercise program and shall be a special emphasis target group for DoD Components anti-smoking education programs.

References (2) and (4) contain conditions, by category, which are considered medically disqualifying. NOTE: The guidance in 5 CFR Part 339, “Medical Qualification Determinations”, must be consulted on all civilian employees in whom there is a question

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of worker fitness. The presence of a medically disqualifying condition does not automatically preclude continued work. This decision should be made by management with input from Occupational Medicine, Human Resources Office and possibly the worker's personal physician.

Reference (6) considers public safety workers, policemen and Firefighters at risk for exposure to blood borne pathogens. This risk is not universal since duties vary greatly between departments and locations. The purpose of requiring assessment of hepatitis B immune status is to determine the extent of potential exposure. Those who are felt to be at risk may be placed in Program 178, Blood and/or Body Fluids.

REFERENCE:

1. Qualification Standards, Fire Protection and Prevention Series, GS-081, July 1993.
2. DODINST 6055.6 DoD Fire and Emergency Services Program, 15 DEC 94.
3. National Fire Fighters Protection Association, (NFPA) Standard on Fire Department Safety and Occupational Health (NFPA 1500), 1997 Edition.
4. NFPA Standard on Medical Requirements for Fire Fighters, (NFPA 1582), 1997 Edition.
5. NFPA Standard on Fire Department Infection Control Plan, (NFPA 1581), 1997 Edition.
6. OSHA Standard 29 CFR 1910.1030.
7. Orris, Peter, Melius, James and Duffy, RM, Occupational Medicine: State of the Air Review Firefighters' Safety and Health, Volume 10/Number 14, Hanley & Belfus, Inc., Philadelphia, PA.

REVISED: 3/2000

FOODSERVICE PERSONNEL

709

EXAM ELEMENT	Program Frequency			Preplacement		
	BASE	PERI	TERM	BASE	PERI	TERM
Medical history: have you ever had:						
Personal history of:						
Major illness or injury	Yes	No	No			
Hospitalization or surgery	Yes	No	No			
Cancer	Yes	No	No			
Back injury	Yes	No	No			
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	No	No			
Have you ever smoked	Yes	No	No			
Do you currently smoke (packs/day)	Yes	No	No			
Heart disease, high blood pressure, or stroke	Yes	No	No			
Current medication use (prescription or OTC)	Yes	No	No			
Medication allergies	Yes	No	No			
Any reproductive health concerns	Yes	No	No			
Skin disease	Yes	No	No			
Hepatitis or jaundice	Yes	No	No			
Tuberculosis	Yes	No	No			
Infectious disease	Yes	No	No			
Chronic abdominal pain, vomiting, other GI symptoms	Yes	No	No			
Comments on medical history:	Yes	No	No			
Laboratory:						
Additional lab tests:						
Appropriate by the physician	Yes	No	No			
Comments on laboratory results:	Yes	No	No			
Physical examination:						
Vital signs	Yes	No	No			
Special attention in examination to:						
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	No	No			
Other appropriate examination (specify)	Yes	No	No			
Comments on physical examination:	Yes	No	No			
Certifications performed IAW:						
NAVMED p-5010	Yes	No	No			
Assessment:	Yes	No	No			
Recommendations:	Yes	No	No			

PROGRAM DESCRIPTION:

This program is required for preplacement exam. There is no requirement for a periodic examination.

The choice of additional examination elements and laboratory tests should be determined locally, based on Public Health regulations, if applicable. Individual considerations such as communicable disease risk in the community and medical and social history of the employee may affect the content of the exam. The concern is to avoid food-borne disease outbreaks. The focus of the exam is to identify potentially communicable conditions.

REFERENCES:

1. 132200Z DEC 89;
2. Manual of Naval Preventive Medicine NAVMED P-5010

REVISED: 3/2000

FORKLIFT OPERATOR

710

EXAM ELEMENT	Program Frequency		
	BASE	PERI	TERM
Medical history: have you ever had:		Every 3 years	
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	3 yrs	No
Major illness or injury	Yes	3 yrs	No
Hospitalization or surgery	Yes	3 yrs	No
Cancer	Yes	3 yrs	No
Back injury	Yes	3 yrs	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	3 yrs	No
Have you ever smoked	Yes	3 yrs	No
Do you currently smoke (packs/day)	Yes	3 yrs	No
Heart disease, high blood pressure, or stroke	Yes	3 yrs	No
Current medication use (prescription or OTC)	Yes	3 yrs	No
Medication allergies	Yes	3 yrs	No
Any reproductive health concerns	Yes	3 yrs	No
Headache, dizziness, light-headedness, weakness	Yes	3 yrs	No
Head injury	Yes	3 yrs	No
Change or loss of vision	Yes	3 yrs	No
Loss or change in hearing	Yes	3 yrs	No
Chest pain, angina, heart attack	Yes	3 yrs	No
Repeated episodes of loss of or near loss of consciousness	Yes	3 yrs	No
Epilepsy (seizure disorder)	Yes	3 yrs	No
Problems with balance and coordination	Yes	3 yrs	No
Problems with numbness, tingling, weakness in hands or feet	Yes	3 yrs	No
Diabetes or other endocrine gland disorder	Yes	3 yrs	No
Mental/emotional illness	Yes	3 yrs	No
Depression, diff concentrating, excessive anxiety	Yes	3 yrs	No
Personality change	Yes	3 yrs	No
Comments on medical history:	Yes	3 yrs	No
Laboratory:			
Serum chemistry:			
Baseline lipid profile	Yes	No	No
Additional lab tests:			
EKG/lipid profile done once past age 40?	Yes	*	No
Cardiology:			
Baseline electrocardiogram	Yes	No	No
Audiology:			
Audiogram	Yes	3 yrs	No

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EXAM ELEMENT	BASE	PERI	TERM
Optometry			
Vision screen (visual acuity)	Yes	3 yrs	No
Color vision	Yes	3 yrs	No
Depth perception	Yes	3 yrs	No
Visual fields	Yes	3 yrs	No
Comments on laboratory results:	Yes	3 yrs	No
Physical examination:			
Required when positive history questions are obtained:			
Vital signs	Yes	3 yrs	No
Special attention in examination to:			
Central nervous system	Yes	3 yrs	No
Peripheral nervous system (strength, sensation, DTR)	Yes	3 yrs	No
Back & musculoskeletal system	Yes	3 yrs	No
Cardiovascular system	Yes	3 yrs	No
Eyes	Yes	3 yrs	No
Ears (tympanic membranes)	Yes	3 yrs	No
Other appropriate examination (specify)	Yes	3 yrs	No
Comments on physical examination:	Yes	3 yrs	No
Is surveillance/PPE consistent with exposures	Yes	3 yrs	No
Are any abnormalities related to exposures/occupations	Yes	3 yrs	No
Recommendations:	Yes	3 yrs	No

*EKG/Lipid panel should be done once after age 40.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Civilian workers who operate MHE for handling ammunition and explosives must be examined under Program #721, Explosive Handler.

REFERENCES:

1. NAVSEA SW023-AH-WHM-010, Chapter 3
2. DoD 4145.19R-1 (NOTE: These references are used by PWC to qualify Materials Handlers Operators.)

REVISED: MARCH 2009

FREON (HALOALKANE) WORKERS

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STRESSOR(S) IN THIS PROGRAM:	NIOSH #	CAS #
1,1,2-trichloro-1,2,2,-trifluoroethane (Freon - 113)	KJ4000000	76-13-1
Trichlorofluoromethane		75-69-4
1,2-dichloro-1,1,2,2-tetrafluoroethane		76-14-2
1-chloro-1,1-difluoroethane		75-68-3
1,2-dibromotetrafluoroethane		124-73-2
Dichlorodifluoromethane		75-71-8
Additional substances		

Program Frequency Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	No
Major illness or injury	Yes	Annual	No
Hospitalization or surgery	Yes	Annual	No
Cancer	Yes	Annual	No
Back injury	Yes	Annual	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	No
Have you ever smoked	Yes	Annual	No
Do you currently smoke (packs/day)	Yes	Annual	No
Heart disease, high blood pressure, or stroke	Yes	Annual	No
Current medication use (prescription or OTC)	Yes	Annual	No
Medication allergies	Yes	Annual	No
Any reproductive health concerns	Yes	Annual	No
Skin disease	Yes	Annual	No
Chest pain, angina, heart attack	Yes	Annual	No
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	No
Shortness of breath	Yes	Annual	No
Comments on medical history:	Yes	Annual	No
Physical examination			
Vital signs	Yes	Annual	No
Special attention in examination to:			
Central nervous system	Yes	Annual	No
Cardiovascular system	Yes	Annual	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	No
Other appropriate examination (specify)	Yes	Annual	No
Comments on physical examination:	Yes	Annual	No
Is surveillance/PPE consistent with exposures	Yes	Annual	No
Are any abnormalities related to exposures/occupations	Yes	Annual	No
Recommendations:	Yes	Annual	No

PROGRAM DESCRIPTION:

Workers exposed to FC-113 at or above the action level, i.e., one half or more of the permissible exposure limits (8-hour TWA) for more than 30 days a year or 10 days a quarter, should be placed in a medical surveillance program and scheduled for annual examinations. Workers should have a preplacement examination if they do not fit the criteria for placement in the medical surveillance program but have potential exposure to FC-113 above the Short Term Exposure Limit (STEL).

PROVIDER COMMENTS:

A limited number of freons have cardiac sensitizing effects. Interval history should stress intake of oral medications with cardiac sensitizing effects (epinephrine, norepinephrine, dopamine, isoproterenol and other sympathomimetic drugs used by asthmatics).

REFERENCES:

1. Commander, Naval Sea Systems Command letter, 4734/9210 Ser 06C13C/1117 of 29 Oct 85;
2. Federal Register 54 FR 2539-2541 Jan 19, 1989;
3. TOXNET listing of Freon chemical names: <http://toxnet.nlm.nih.gov>

REVISED: Oct 2006

HAZARDOUS WASTE WORKERS AND EMERGENCY RESPONDERS

	Program Frequency	Annual		
EXAM ELEMENT	BASE	PERI	TERM	
Medical history: have you ever had:				
Personal history of:				
Is your work exposure history current (OPNAV 5100/15)	Yes	Annual	Yes	
Major illness or injury	Yes	Annual	Yes	
Hospitalization or surgery	Yes	Annual	Yes	
Cancer	Yes	Annual	Yes	
Back injury	Yes	Annual	Yes	
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Annual	Yes	
Have you ever smoked	Yes	Annual	Yes	
Do you currently smoke (packs/day)	Yes	Annual	Yes	
Heart disease, high blood pressure, or stroke	Yes	Annual	Yes	
Current medication use (prescription or OTC)	Yes	Annual	Yes	
Medication allergies	Yes	Annual	Yes	
Any reproductive health concerns	Yes	Annual	Yes	
Allergies (asthma, hay fever, eczema)	Yes	Annual	Yes	
Skin disease	Yes	Annual	Yes	
Heat injury (cramps, exhaustion, stroke)	Yes	Annual	Yes	
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Annual	Yes	
Headache, dizziness, light-headedness, weakness	Yes	Annual	Yes	
Cold injury(frostbite, chill, trench ft, hypothermia)	Yes	Annual	Yes	
Change or loss of vision	Yes	Annual	Yes	
Loss or change in hearing	Yes	Annual	Yes	
Chest pain, angina, heart attack	Yes	Annual	Yes	
Repeated episodes of loss of or near loss of consciousness	Yes	Annual	Yes	
Shortness of breath	Yes	Annual	Yes	
Current pregnancy (females only)	Yes	Annual	Yes	
Epilepsy (seizure disorder)	Yes	Annual	Yes	
Problems with balance and coordination	Yes	Annual	Yes	
Problems with numbness, tingling, weakness in hands or feet	Yes	Annual	Yes	
Thyroid disease (heat or cold intolerance)	Yes	Annual	Yes	
Mental/emotional illness	Yes	Annual	Yes	
Work history of:				
Exposure to skin irritants	Yes	Annual	Yes	
Exposure to respiratory irritants	Yes	Annual	Yes	
Exposure to carcinogens	Yes	Annual	Yes	
Comments on medical history:	Yes	Annual	Yes	

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	EXAM ELEMENT	BASE	PERI	TERM
Laboratory				
	Hematology:			
	Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	Annual	Yes
	Differential white blood cell count	Yes	Annual	Yes
	Serum chemistry:			
	Liver profile to include:			
	AST , ALT, Total Bilirubin, alk. phos	Yes	Annual	Yes
	Baseline lipid profile	Yes	No	No
	BUN and creatinine	Yes	Annual	Yes
	Additional lab tests:			
	EKG/lipid profile done once past age 40?	Yes	**	Yes
	Cardiology:			
	Baseline electrocardiogram	Yes	No	No
	Audiology:			
	Audiogram	Yes	Annual	Yes
	Radiology:			
	Chest x-ray (pa)	Yes	No	Yes
	Spirometry:			
	Spirometry (FEV1, FVC, FEV1/FVC)	Yes	Annual	Yes
	Optometry:			
	Vision screen (visual acuity)	Yes	Annual	Yes
	Color vision	Yes	Annual	Yes
	Comments on laboratory results:	Yes	Annual	Yes
	Physical examination:			
	Vital signs	Yes	Annual	Yes
	Special attention in examination to:			
	Central nervous system	Yes	Annual	Yes
	Peripheral nervous system (strength, sensation, DTR)	Yes	Annual	Yes
	Back & musculoskeletal system	Yes	Annual	Yes
	Cardiovascular system	Yes	Annual	Yes
	Eyes	Yes	Annual	Yes
	Respiratory system	Yes	Annual	Yes
	Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	Annual	Yes
	Thyroid	Yes	Annual	Yes
	Metabolic disturbance (fever, tachycardia)	Yes	Annual	Yes
	Obesity	Yes	Annual	Yes
	Overall physical fitness	Yes	Annual	Yes
	Other appropriate examination (specify)	Yes	Annual	Yes
	Comments on physical examination:	Yes	Annual	Yes
	Special notations:			
	Physician's/provider's written opinion required	Yes	Annual	Yes
	Is surveillance/PPE consistent with exposures	Yes	Annual	Yes
	Are any abnormalities related to exposures/occupations	Yes	Annual	Yes
	Recommendations:	Yes	Annual	Yes

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* AST for baseline is included in baseline liver profile. Only AST is required on annual basis.

**EKG/Lipid panel should be done once after age 40.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

29 CFR 1910.120 establishes minimal medical surveillance for personnel who are or may be exposed to hazardous substances at or above the PEL for 30 days per year, wear a respirator 30 days per year, or sustain an overexposure incident involving hazardous substances. CFR requires an annual exam unless the attending physician feels longer intervals are appropriate. Under no circumstances should the frequency be less than every two years. A sample Physician's/provider's Written Opinion, required by OSHA, can be found in Physician's/Provider's Written Opinion Samples.

NIOSH recommends annual screening, including labs for liver, kidney, and blood forming function.

REFERENCES:

1. 29 CFR 1910.120
2. [NIOSH Pub No. 85-115, Guidance for Hazardous Waste Site Activities](#)
3. DODI 6055.05, Table C2.T16, HAZOPER

REVISED: OCTOBER 2009.

HEALTH CARE WORKERS (HCWS)

719

EXAM ELEMENT	Program Frequency		TERM
	BASE	PERI	
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	No	**
Major illness or injury	Yes	No	**
Hospitalization or surgery	Yes	No	**
Cancer	Yes	No	**
Back injury	Yes	No	**
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	No	**
Have you ever smoked	Yes	No	**
Do you currently smoke (packs/day)	Yes	No	**
Heart disease, high blood pressure, or stroke	Yes	No	**
Current medication use (prescription or OTC)	Yes	No	**
Medication allergies	Yes	No	**
Any reproductive health concerns	Yes	No	**
Allergies (asthma, hay fever, eczema)	Yes	No	**
Have you ever been evaluated for latex allergy	Yes	No	**
Skin disease	Yes	No	**
Recurrent skin rash	Yes	No	**
Tuberculosis	Yes	No	**
Hepatitis or jaundice	Yes	No	**
History of chicken pox	Yes	No	**
Current pregnancy (self or spouse)	Yes	No	**
Infertility or miscarriage (self or spouse)	Yes	No	**
Adverse reaction to eating any vegetable or fruit	Yes	No	**
Adverse reaction to any rubber/latex containing product	Yes	No	**
Multiple operations or chronic medical instrumentation	Yes	No	**
Unexplained hives or symptoms of shock	Yes	No	**
Itchy eyes, runny nose, respiratory symptoms when using latex gloves	Yes	No	**
Work history of:			
Exposure to chemotherapeutic/antineoplastic agents	Yes	No	**
Exposure to aerosolized antibiotics/antivirals	Yes	No	**
Exposure to anesthetic gases	Yes	No	**
Exposure to ethylene oxide	Yes	No	**
Exposure to ionizing radiation	Yes	No	**
Exposure to non-ionizing radiation (laser, IR, mw, UV)	Yes	No	**

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EXAM ELEMENT	BASE	PERI	TERM
Exposure to potentially infectious body fluids	Yes	No	**
Exposure to formaldehyde	Yes	No	**
Regular contact with latex gloves or other Rubber products?	Yes	No	**
Comments on medical history:	Yes	No	**
Laboratory:			
Additional lab tests:			
Tuberculosis screen	Yes	Annual	No
Comments on laboratory results:	Yes	Annual	No
Physical examination:			
Vital signs	Yes	No	**
Other appropriate examination (specify)	Yes	No	**
Comments on physical examination:	Yes	No	**
Qualifications:			
Current immunizations	Yes	*	**
Measles/mumps/rubella immune status	Yes	No	**
Varicella immune status	Yes	No	**
Is hepatitis B vaccine series complete or prior infection documented?	Yes	No	**
Is surveillance/PPE consistent with exposures	Yes	No	**
Are any abnormalities related to exposures/occupations	Yes	No	**
Recommendations:	Yes	No	**

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*Annual PPD requirements and/or immunizations review drive the need to bring HCW to the clinic. Otherwise, there is no requirement for periodic evaluation.

**A termination examination provides an opportunity to review the medical record and document any medical conditions and concerns.

PROGRAM DESCRIPTION:

This program provides for a baseline review of immunization status and history.

A screening form for latex allergy is available in the Navy and Marine Corps Public Health Center's Occupational Medicine [Field Operations Manual](#).

The immunization requirements promulgated by the various references can be summarized as follows:

- A. Hepatitis B vaccine series is required for those medical and dental workers with exposure or potential exposure to blood or body fluids unless there is a contraindication. Those with exposure to blood and other infectious bodily fluids should be placed in Program 178.
- B. HCWs who have no history of varicella or serologic evidence of immunity should be counseled to report varicella exposure to the clinic since patient care restrictions may be appropriate 8 - 21 days after exposure. Those HCWs who work in patient care and have not had varicella should have varicella antibody measured.
- C. Immunizations against tetanus, diphtheria and pertussis (Tdap) should be current.
- D. Immunity to varicella, measles, mumps and rubella is required. This requirement can be met by documentation of physician-diagnosed illness (except rubella), serologic evidence of immunity, or documented immunization (for measles, 2 doses 1 month apart after 1 year of age in individuals born in or after 1957 is required).
- E. It is reasonable to obtain rubella antibody titer for females of child-bearing age as part of the pre-employment exam.
- F. Specific requirements are contained in the instructions listed in the program description.
- G. Guidance on periodic screening and the booster phenomenon is covered in reference (3).
- H. Annual influenza immunization for HCWs is recommended.

There is no specific exam required. The content of the exam and assignment to specific stressors are determined by review of responses to history questions and further interview of the worker as deemed appropriate. Health care workers are potentially exposed to a wide variety of chemical, physical and biologic agents. These exposures may change over time. Annual update of work exposures allows for adjustment of exposure programs as appropriate.

REFERENCES:

1. OSHA Standard 1910.1030;
2. NIOSH, Guidelines for prevention of transmission of human immunodeficiency virus and hepatitis B virus to health-care and public-safety workers, 1989, DHHS (NIOSH) Pub. No. 89-107, US Government Printing Office, Washington, D.C.;

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3. Center for Disease Control and Prevention Morbidity and Mortality Weekly Report "Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Facilities, 28 Oct 1994, Volume 43, No. RR-13;
4. McDiarmid MA, Kessler, ER, The Health Care Worker, Occupational Medicine State of the Art Reviews, Vol. 12/Number 4, Oct-Dec 1997, Hanley & Belfus, Inc.;
5. NIOSH alert, Preventing Allergic Reactions to Natural Rubber Latex in the Workplace, June 1997, DHHS (NIOSH) Publication No. 97-135 (<http://www.cdc.gov/niosh/latexalt.html>)
6. [Preventing Tetanus, Diphtheria, and Pertussis Among Adults](#): Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine, Recommendations of the Advisory Committee on Immunization Practices (ACIP) and Recommendation of ACIP, supported by the Healthcare Infection Control Practices Advisory Committee (HICPAC), for Use of Tdap Among Health-Care Personnel; MMWR: December 15, 2006 / 55(RR17);1-33.
7. DODI 6055.05-M, Table C2.T14, Bloodborne Pathogens

REVISED: 10/97

REVIEWED: OCTOBER 2009.

MOTOR VEHICLE OPERATORS (DOT)

706

OCCUPATION(S) IN THIS PROGRAM:

DOT vehicle operators

Program Frequency

2 years

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	2 yrs	No
Major illness or injury	Yes	2 yrs	No
Hospitalization or surgery	Yes	2 yrs	No
Cancer	Yes	2 yrs	No
Back injury	Yes	2 yrs	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	2 yrs	No
Have you ever smoked	Yes	2 yrs	No
Do you currently smoke (packs/day)	Yes	2 yrs	No
Heart disease, high blood pressure, or stroke	Yes	2 yrs	No
Current medication use (prescription or OTC)	Yes	2 yrs	No
Medication allergies	Yes	2 yrs	No
Any reproductive health concerns	Yes	2 yrs	No
Use of seat belts (always, mostly, some, none)	Yes	2 yrs	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	2 yrs	No
Syphilis or gonorrhea	Yes	2 yrs	No
Headache, dizziness, light-headedness, weakness	Yes	2 yrs	No
Nervous stomach or ulcer	Yes	2 yrs	No
Head injury	Yes	2 yrs	No
Change or loss of vision	Yes	2 yrs	No
Loss or change in hearing	Yes	2 yrs	No
Chest pain, angina, heart attack	Yes	2 yrs	No
Repeated episodes of loss of or near loss of consciousness	Yes	2 yrs	No
Kidney disease	Yes	2 yrs	No
Epilepsy (seizure disorder)	Yes	2 yrs	No
Problems with balance and coordination	Yes	2 yrs	No
Problems with numbness, tingling, weakness in hands or feet	Yes	2 yrs	No
Migraine headache	Yes	2 yrs	No
Diabetes or other endocrine gland disorder	Yes	2 yrs	No
Mental/emotional illness	Yes	2 yrs	No
Depression, diff concentrating, excessive anxiety	Yes	2 yrs	No
Treatment for drug or alcohol use	Yes	2 yrs	No
Personality change	Yes	2 yrs	No

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EXAM ELEMENT	BASE	PERI	TERM
Muscle or joint problems	Yes	2 yrs	No
Permanent defect from illness, disease or injury	Yes	2 yrs	No
Family history of:			
Heart disease, high blood pressure, or stroke	Yes	2 yrs	No
Comments on medical history:	Yes	2 yrs	No
Laboratory:			
Serum chemistry:			
Baseline lipid profile	Yes	No	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	2 yrs	No
Additional lab tests:			
EKG/lipid profile done once past age 40?	No	*	No
Cardiology:			
Electrocardiogram	Yes	*	No
Audiology:			
Audiogram	Yes	2 yrs	No
Optometry:			
Vision screen (visual acuity)	Yes	2 yrs	No
Color vision	Yes	2 yrs	No
Visual fields	Yes	2 yrs	No
Comments on laboratory results:	Yes	2 yrs	No
Physical examination:			
Vital signs	Yes	2 yrs	No
Special attention in examination to:			
Central nervous system	Yes	2 yrs	No
Peripheral nervous system (strength, sensation, DTR)	Yes	2 yrs	No
Back & musculoskeletal system	Yes	2 yrs	No
Extremities	Yes	2 yrs	No
Cardiovascular system	Yes	2 yrs	No
Peripheral vascular system (Reynaud's)	Yes	2 yrs	No
Eyes	Yes	2 yrs	No
Abdomen	Yes	2 yrs	No
Genitourinary tract	Yes	2 yrs	No
Respiratory system	Yes	2 yrs	No
Ears (tympanic membranes)	Yes	2 yrs	No
Other appropriate examination (specify)	Yes	2 yrs	No
Comments on physical examination:	Yes	2 yrs	No
Is surveillance/pep consistent with exposures	Yes	2 yrs	No
Are any abnormalities related to exposures/occupations	Yes	2 yrs	No
Recommendations:	Yes	2 yrs	No

*EKG/Lipid panel should be done once after age 40.

PROGRAM DESCRIPTION:

Active duty military personnel are exempt from the standards laid down for commercial drivers' licenses outlined in 49 CFR. See 49 CFR 383.3 (c). However, if the military member is being examined with the intent of issuing a medical clearance for a valid commercial driver's license that would be recognized by the State and the DOT, then the physical qualifications and the periodicity of the exam would have to be the same.

Physical qualifications are contained in Federal Motor Carrier Safety Regulations, U. S. Department of Transportation, Federal Highway Administration, 49 CFR 391.41-49. A handbook containing the regulations can be ordered from: American Trucking Association 2200 Mill road, Alexandria, VA. 22314-4677, 1-800-ATA-LINE.

49 CFR standards apply to and are required for all personnel (civilian and active duty) to receive a Certification of Medical Examination to operate over the road or CDL endorsement required vehicles.

Explosive Vehicle Operators (civilian and active duty) are examined with these same standards under program 720.

REFERENCES:

1. U. S. Department of Transportation, [49 CFR 391.41-49](#)
2. Hartenbaum, N. The DOT Medical Examination, OEM Press, Boston, MA 1997.

REVISED: AUGUST 2008

REVIEWED: MARCH 2009

MOTOR VEHICLE OPERATOR (OTHER THAN DOT)

	Program Frequency		
	Every 4 years		
EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	4 yrs	No
Major illness or injury	Yes	4 yrs	No
Hospitalization or surgery	Yes	4 yrs	No
Cancer	Yes	4 yrs	No
Back injury	Yes	4 yrs	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	4 yrs	No
Have you ever smoked	Yes	4 yrs	No
Do you currently smoke (packs/day)	Yes	4 yrs	No
Heart disease, high blood pressure, or stroke	Yes	4 yrs	No
Current medication use (prescription or OTC)	Yes	4 yrs	No
Medication allergies	Yes	4 yrs	No
Use of seat belts (always, mostly, some, none)	Yes	4 yrs	No
Any reproductive health concerns	Yes	4 yrs	No
Headache, dizziness, light-headedness, weakness	Yes	4 yrs	No
Head injury	Yes	4 yrs	No
Change or loss of vision	Yes	4 yrs	No
Loss or change in hearing	Yes	4 yrs	No
Chest pain, angina, heart attack	Yes	4 yrs	No
Repeated episodes of loss of or near loss of consciousness	Yes	4 yrs	No
Epilepsy (seizure disorder)	Yes	4 yrs	No
Problems with balance and coordination	Yes	4 yrs	No
Problems with numbness, tingling, weakness in hands or feet	Yes	4 yrs	No
Diabetes or other endocrine gland disorder	Yes	4 yrs	No
Mental/emotional illness	Yes	4 yrs	No
Depression, diff concentrating, excessive anxiety	Yes	4 yrs	No
Personality change	Yes	4 yrs	No
Comments on medical history:	Yes	4 yrs	No
Laboratory:			
Serum chemistry:			
Baseline lipid profile	Yes	No	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	4 yrs	No
Additional lab tests:			
EKG/lipid profile done once past age 40?	Yes	4 yrs	No

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EXAM ELEMENT	BASE	PERI	TERM
Cardiology:			
Baseline electrocardiogram	Yes	No	No
Audiology:			
Audiogram	Yes	4 yrs	No
Optometry:			
Vision screen (visual acuity)	Yes	4 yrs	No
Visual fields	Yes	4 yrs	No
Comments on laboratory results:	Yes	4 yrs	No
Physical examination:			
Required when positive history questions are obtained:			
Vital signs	Yes	4 yrs	No
Special attention in examination to:			
Central nervous system	Yes	4 yrs	No
Peripheral nervous system (strength, sensation, DTR)	Yes	4 yrs	No
Back & musculoskeletal system	Yes	4 yrs	No
Cardiovascular system	Yes	4 yrs	No
Eyes	Yes	4 yrs	No
Ears (tympanic membranes)	Yes	4 yrs	No
Other appropriate examination (specify)	Yes	4 yrs	No
Comments on physical examination:	Yes	4 yrs	No
Is surveillance/PPE consistent with exposures	Yes	4 yrs	No
Are any abnormalities related to exposures/occupations	Yes	4 yrs	No
Recommendations:	Yes	4 yrs	No

** EKG/Lipid profile should be done once after age 40.

PROGRAM DESCRIPTION:

Form OF 345, Physical Fitness Inquiry for Motor Vehicle Operators, is used by licensing examiners to screen health status.

This program, #712, can be used to meet local requirements for performing periodic medical examinations when requested.

PROVIDER COMMENTS:

Guidelines for examinations for interstate driving and any driver covered by Federal Motor Carrier Safety regulations, 49 CFR 391.41-49, Subpart E, are contained in Program #706.

REFERENCES:

1. 5 CFR Part 930.108, Subpart A-Motor Vehicle Operators.
2. 5 CFR Part 339.
3. DoD 4500.36-R, Management, Acquisition and Use of Motor Vehicles.
4. NAVFAC P-300, Management of Civil Engineering Support Equipment, May 97 (https://portal.navfac.navy.mil/portal/page/portal/DOCS/DOC_STORE_PUB/P-300.PDF).

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5. Marine Corps TM 11240-14/3B, Standard Licensing Procedures for Operators of Military Motor Vehicles.

REVISED: 10/2009

NAVAL CRIMINAL INVESTIGATIVE SERVICE

Program Frequency	By Age
Up to 37 years	Every 3 yrs
Age 38 to 40 years	Every 2 yrs
Age 41 and over	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	By Age	No
Major illness or injury	Yes	By Age	No
Hospitalization or surgery	Yes	By Age	No
Cancer	Yes	By Age	No
Back injury	Yes	By Age	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	By Age	No
Have you ever smoked	Yes	By Age	No
Do you currently smoke (packs/day)	Yes	By Age	No
Heart disease, high blood pressure, or stroke	Yes	By Age	No
Current medication use (prescription or OTC)	Yes	By Age	No
Medication allergies	Yes	By Age	No
Any reproductive health concerns	Yes	By Age	No
Heart disease, high blood pressure or stroke	Yes	By Age	No
Tuberculosis	Yes	By Age	No
Communicable disease	Yes	By Age	No
Nervous stomach or ulcer	Yes	By Age	No
Loss or change in hearing	Yes	By Age	No
Epilepsy (seizure disorder)	Yes	By Age	No
Mental/emotional illness	Yes	By Age	No
Permanent defect from illness, disease or injury	Yes	No	No
Comments on medical history:	Yes	By Age	No
Laboratory:			
Hematology:			
Complete blood count (HGB, HCT, WBC, MCV, MCH, MCHC)	Yes	By Age	No
Serum chemistry:			
Basic profile to include:			
BUN, creatinine, uric acid, calcium, Total Bilirubin, alk. phos, AST	Yes	By Age	No
Liver profile to include:			
AST, Total Bilirubin, alk. Phos	Yes	By Age	No
Cholesterol	Yes	By Age	No
Triglycerides	Yes	By Age	No
Urinalysis:			

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EXAM ELEMENT	BASE	PERI	TERM
Routine:			
Urinalysis with microscopic	Yes	By Age	No
Cardiology:			
Electrocardiogram	Yes	***	No
Audiology:			
Audiogram	Yes	By Age	No
Radiology			
Chest x-ray (pa)	Yes	No	No
Optometry:			
Vision screen (visual acuity)	Yes	By Age	No
Color vision	Yes	By Age	No
Depth Perception	Yes	By Age	No
Comments on laboratory results:	Yes	By Age	No
Physical examination:			
Vital signs	Yes	By Age	No
Other appropriate examination (specify)	Yes	By Age	No
Comments on physical examination:	Yes	By Age	No
Certifications performed IAW:			
NCIS manual for administration	Yes	By Age	No
Review of functional/environmental requirements of SF 78	Yes	By Age	No
Is surveillance/PPE consistent with exposures	Yes	By Age	No
Are any abnormalities related to exposures/occupations	Yes	By Age	No
Recommendations:	Yes	By Age	No

***The EKG is given every 5 years beginning at age 35.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

OSHA Regulation 1910.1030 considers public safety workers, including both policemen and firefighters at risk for exposure to blood borne pathogens. This risk is not universal since duties of public safety workers vary greatly between departments and locations. The purpose of the requirement for assessment of hepatitis B immune status is to determine for the individual the extent of potential exposure. Those who are felt to be at significant risk may be placed in Program 178, Blood and/or Body Fluids.

Weight certification is required for NCIS agents. Weight certification is accomplished by completing the weight range chart (addendum 2, NCIS-1, Chapter 13) provided with the SF 78 at each examination and annually.

PC Matrix is an acceptable form for this examination. Original forms are submitted for headquarters review. A copy of the examination should be kept in a health record. Certificate of Medical Examination, SF 78, is used for preplacement examinations.

REFERENCES:

1. NCIS Administrative Manual, NCIS-1, Chapter 13.

2. OSHA Standard 1910.1030.

REVISED: 1/98

POLICE/GUARD SECURITY

714

Program Frequency	By Age
Up to 34 years	Every 5 years
35 to 44 years	Every 2 years
45+ years	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	By Age	No
Major illness or injury	Yes	By Age	No
Hospitalization or surgery	Yes	By Age	No
Cancer	Yes	By Age	No
Back injury	Yes	By Age	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	By Age	No
Have you ever smoked	Yes	By Age	No
Do you currently smoke (packs/day)	Yes	By Age	No
Heart disease, high blood pressure, or stroke	Yes	By Age	No
Current medication use (prescription or OTC)	Yes	By Age	No
Medication allergies	Yes	By Age	No
Any reproductive health concerns	Yes	By Age	No
Headache, dizziness, light-headedness, weakness	Yes	By Age	No
Change or loss of vision	Yes	By Age	No
Loss or change in hearing	Yes	By Age	No
Chest pain, angina, heart attack	Yes	By Age	No
Repeated episodes of loss of or near loss of consciousness	Yes	By Age	No
Shortness of breath	Yes	By Age	No
Epilepsy (seizure disorder)	Yes	By Age	No
Problems with balance and coordination	Yes	By Age	No
Problems with numbness, tingling, weakness in hands or feet	Yes	By Age	No
Thyroid disease (heat or cold intolerance)	Yes	By Age	No
Diabetes or other endocrine gland disorder	Yes	By Age	No
Mental/emotional illness	Yes	By Age	No
Depression, diff concentrating, excessive anxiety	Yes	By Age	No
Personality change	Yes	By Age	No
Work history:			
Exposure to potentially infectious body fluids	Yes	By Age	No
Comments on medical history:	Yes	By Age	No
Laboratory:			
Serum chemistry:			
Basic profile to include:			

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EXAM ELEMENT	BASE	PERI	TERM
BUN, creatinine, uric acid, calcium, Total bilirubin, alkaline phosphatase, AST	Yes	By Age	No
Baseline lipid profile	Yes	No	No
Urinalysis:			
Routine:			
Urinalysis with microscopic	Yes	By Age	No
Additional lab tests:			
EKG/lipid profile done once past age 40?	Yes	*	No
Cardiology:			
Baseline electrocardiogram	Yes	No	No
Audiology:			
Audiogram	Yes	By Age	No
Optometry:			
Vision screen (visual acuity)	Yes	By Age	No
Comments on laboratory results:	Yes	By Age	No
Physical examination:			
Vital signs	Yes	By Age	No
Special attention in examination to:			
Central nervous system	Yes	By Age	No
Peripheral nervous system (strength, sensation, DTR)	Yes	By Age	No
Back & musculoskeletal system	Yes	By Age	No
Cardiovascular system	Yes	By Age	No
Eyes	Yes	By Age	No
Respiratory system	Yes	By Age	No
Ears (tympanic membranes)	Yes	By Age	No
Skin-with regard to malignant & pre-malignant conditions	Yes	By Age	No
Thyroid	Yes	By Age	No
Metabolic disturbance (fever, tachycardia)	Yes	By Age	No
Overall physical fitness	Yes	By Age	No
Other appropriate examination (specify)	Yes	By Age	No
Comments on physical examination:	Yes	By Age	No
Qualifications:			
Current immunizations	Yes	By Age	No
Is hepatitis B series complete or prior infection documented?	Yes	By Age	No
Is surveillance/PPE consistent with exposures	Yes	By Age	No
Are any abnormalities related to exposures/occupations	Yes	By Age	No
Recommendations:	Yes	By Age	No

*EKG/Lipid profile should be done once after age 40.

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

OSHA Regulation considers public safety workers, including both policemen and firefighters, at risk for exposure to blood borne pathogens. This risk is not universal since duties of public safety workers vary greatly between departments and locations. The purpose of the requirement for assessment of hepatitis B immune status is to determine for the individual the extent of potential exposure. Those who are felt to be at significant risk may be placed in Program 178, Blood and/or Body Fluids.

Local activities may have more stringent examination and frequency requirements. If local requirements are more stringent, the medical clinic should keep a copy of written requirements for additional tests.

Tetanus immunization should be kept current.

REFERENCES:

1. OSHA Standard 1910.1030;
2. 5 CFR 930;
3. X-118 Series GS-083.
4. U.S. Office of Personnel Management Policies and Instructions Medical Requirements
<http://www.opm.gov/qualifications/policy/medical-reqs.asp>

REVISED: 3/2000

RESPIRATOR USER CERTIFICATION EXAM

Program Frequency	By Age
15 to 34 years	Every 5 years
35 to 44 years	Every 2 years
45+ years	Annual

EXAM ELEMENT	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	By Age	No
Major illness or injury	Yes	By Age	No
Hospitalization or surgery	Yes	By Age	No
Cancer	Yes	By Age	No
Back injury	Yes	By Age	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	By Age	No
Have you ever smoked	Yes	By Age	No
Do you currently smoke (packs/day)	Yes	By Age	No
Heart disease, high blood pressure, or stroke	Yes	By Age	No
Current medication use (prescription or OTC)	Yes	By Age	No
Medication allergies	Yes	By Age	No
Any reproductive health concerns	Yes	By Age	No
Allergies (asthma, hay fever, eczema)	Yes	By Age	No
Skin disease	Yes	By Age	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	By Age	No
Wheezing	Yes	By Age	No
Tuberculosis	Yes	By Age	No
Use of eye glasses	Yes	By Age	No
Contact lens use	Yes	By Age	No
Loss of vision in either eye	Yes	By Age	No
Color blindness	Yes	By Age	No
Eye irritation	Yes	By Age	No
Any other eye or vision problem	Yes	By Age	No
Inability to smell	Yes	By Age	No
Any injury to your ears	Yes	By Age	No
Ruptured ear drum	Yes	By Age	No
Loss or change in hearing	Yes	By Age	No
A need to wear a hearing aid	Yes	By Age	No
Any other hearing or ear problem	Yes	By Age	No
Chest pain, angina, heart attack	Yes	By Age	No
Repeated episodes of loss of or near loss of consciousness	Yes	By Age	No
Frequent pain or tightness in your chest	Yes	By Age	No

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EXAM ELEMENT	BASE	PERI	TERM
Swelling in legs or feet (not caused by walking)	Yes	By Age	No
Any other heart problem you've been told about	Yes	By Age	No
Shortness of breath	Yes	By Age	No
Cough (dry or productive)	Yes	By Age	No
Current pregnancy (females only)	Yes	By Age	No
Epilepsy (seizure disorder)	Yes	By Age	No
Problems with balance and coordination	Yes	By Age	No
Problems with numbness, tingling, weakness in hands or feet	Yes	By Age	No
Diabetes or other endocrine gland disorder	Yes	By Age	No
Mental/emotional illness	Yes	By Age	No
Claustrophobia	Yes	By Age	No
Muscle or joint problems	Yes	By Age	No
Any other muscle or skeletal problem that may interfere with using a respirator	Yes	By Age	No
Work history of:			
Prior respirator use	Yes	By Age	No
If yes, any problems that interfered with use	Yes	By Age	No
Comments on medical history:	Yes	By Age	No
Physical examination:			
Vital signs	Yes	By Age	No
Height	Yes	By Age	No
Weight	Yes	By Age	No
Special attention in examination to:			
Cardiovascular system	Yes	By Age	No
Eyes	Yes	By Age	No
Respiratory system	Yes	By Age	No
Ears (tympanic membranes)	Yes	By Age	No
Skin (rash, erosion, ulcer, pigment, eczema, etc)	Yes	By Age	No
Other appropriate examination (specify)	Yes	By Age	No
Comments on physical examination:	Yes	By Age	No
Is surveillance/PPE consistent with exposures	Yes	By Age	No
Are any abnormalities related to exposures/occupations	Yes	By Age	No
Recommendations:	Yes	By Age	No

PROGRAM DESCRIPTION:

PROVIDER COMMENTS:

Spirometry and chest x-rays are not routinely required. They are not recommended solely as data to determine if a respirator should be worn, but may be medically indicated in some cases when additional information is needed to determine fitness. (2) Workers who wear respirators may receive spirometry and chest x-rays as part of surveillance requirements for specific hazards.

REFERENCES:

1. OSHA Standard [29 CFR 1910.134](#);
2. ANSI Standard Z88.2-1980, Practices for Respiratory Protection;
3. NIOSH Respirator Decision Logic, U.S. Department of Health and Human Services, DHHS (NIOSH) Pub. No. 87-108;
4. [OPNAVINST 5100.23](#) (series), Chapter 15;
5. [OPNAVINST 5100.19](#) (series), Chapter B6;
6. OPNAVINST 6000.1A MANAGEMENT OF PREGNANT SERVICEWOMEN.
7. American Thoracic Society, Respiratory Protection Guidelines, American Journal of Respiratory Critical Care Medicine, Vol. 154. pp 1153-1165, 1996;
8. Navy and Marine Corps Public Health Center (NMCPHC) A Guide for Respiratory Protection Program Managers, NEHC TM-96-1, 1996.

REVISED: 3/2000

SUBMARINE DUTY**717**

Program Frequency For Active Duty accessions to submarine duty or submarine qualified: upon initial application and subsequently every 5 years.
For Non-submarine Qualified Military, all civilians, governmental and contractor employees, and military dependents: prior to embarkation on a submarine.

PROGRAM DESCRIPTION:

This program is designated solely to provide guidance on scheduling frequency. Disqualifying conditions, tests, and forms required are promulgated in Manual of the Medical Department, [NAVMED P-117, Chapter 15](#), Article 15-106, Change 126 for Submarine Qualified Military, and in [OPNAVINST 6420.1](#), 22 Dec 2005 for Non-submarine Qualified Military, all civilians, governmental and contractor employees, and military dependents.

PROVIDER COMMENTS:

Active Duty Submarine Duty Candidates and Submarine Qualified—the exam is given in accordance with MANMED article 15-106 and must be reviewed and signed by a UMO.

Cruises of Short Duration: (such as builder's trials and test of submarine equipment): Non-submarine Qualified Military, all civilians, governmental and contractor employees, and military dependents MUST:

1. Complete Encl (1) of OPNAVINST 6420.1
2. Have the completed enclosure(1) and their medical record reviewed by a submarine duty Independent Duty Corpsman (IDC) or Undersea Medical Officer (UMO) to determine suitability to embark on a submarine. Enclosure 2 of OPNAVINST 6420.1 provides guidance to determine qualification to embark on a submarine
3. A UMO must make the final determination of qualification to embark utilizing the guidelines in encl (2) of OPNAVINST 6420.1
4. If the UMO determines additional medical evaluation is required to clear the individual for embarkation, the Civilian personnel or their employers will be responsible for obtaining the required medical consultation and forwarding it to the screening UMO in a timely manner.

Cruises of Long Duration or Forward Deployed. All individuals are required to have:

1. A physical exam within 12 months of the anticipated embarkation date certifying that they meet the requirements of enclosure (2).
2. An interview and review of their health record. Enclosure (3) of OPNAVINST 6420.1 shall be used to document this review.
3. A UMO shall make the final recommendation concerning the individual's fitness for embarkation. Completion of enclosure (1) is required within 1 month of scheduled embarkation.
4. A health record review by the SUBIDC upon embarkation.

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NOTE: The responsibility for ensuring that each individual to be embarked on submarines for extended periods has received an appropriate physical examination rests with the command issuing the travel orders. Military non-submarine and civilian employees of the government should be examined by the command to which the individual is attached prior to commencement of travel to embarkation location. If medical examinations are ordered or offered to civilian employees of the government, the activity must follow procedures established by CPI 339. Other civilian or non-governmental personnel should be examined by their company-designated physician or, if that is not appropriate, by their personal physician prior to reporting for embarkation. The examination shall utilize enclosure (2) of OPNAVINST 6420.1, and phone consultation with the local ISIC UMO as applicable.

REVISED: 10/2005

WASTEWATER/SEWAGE WORKER

702

EXAM ELEMENT	Program Frequency		
	BASE	PERI	TERM
Medical history: have you ever had:		Every 5 years	
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	5 yrs	No
Major illness or injury	Yes	5 yrs	No
Hospitalization or surgery	Yes	5 yrs	No
Cancer	Yes	5 yrs	No
Back injury	Yes	5 yrs	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	5 yrs	No
Have you ever smoked	Yes	5 yrs	No
Do you currently smoke (packs/day)	Yes	5 yrs	No
Heart disease, high blood pressure, or stroke	Yes	5 yrs	No
Current medication use (prescription or OTC)	Yes	5 yrs	No
Medication allergies	Yes	5 yrs	No
Any reproductive health concerns	Yes	5 yrs	No
Skin disease	Yes	5 yrs	No
Comments on medical history:	Yes	5 yrs	No
Qualifications:		5 yrs	
Current immunizations	Yes	5 yrs	No
Certifications performed IAW NAVMED P-5010	Yes	5 yrs	No
Is surveillance/PPE consistent with exposures	Yes	5 yrs	No
Are any abnormalities related to exposures/occupations	Yes	5 yrs	No
Recommendations:	Yes	5 yrs	No

PROGRAM DESCRIPTION:

The immunization status of wastewater/sewage worker should be reviewed every five years.

Tetanus, diphtheria and pertussis (Tdap) vaccine should be updated according to current recommendations. Polio vaccine is administered to individuals not fully immunized. Current CDC recommendations do not support hepatitis A vaccination for sewage workers.

PROVIDER COMMENTS:

For those applicants without a written record of polio immunization status, attendance at public school in the U.S. is adequate for presumption of prior oral polio vaccine administration.

REFERENCES:

1. NAVMED P-5010, Manual of Naval Preventive Medicine;
2. NAVMEDCOMINST 6230.3, Immunizations and Chemoprophylaxis.

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3. DHHS (NIOSH) Publication Number 2002-149, Guidance For Controlling Potential Risks To Workers Exposed to Class B Biosolids.

REVISED: 10/2009

WEIGHT HANDLING EQUIPMENT (MANAGEMENT OF)

OCCUPATIONS IN THIS PROGRAM:

- Crane operators
- *Railroad equipment operators
- *Conductors
- *Brakemen
- *Riggers
- *Climbers

EXAM ELEMENT	Program Frequency		
	BASE	PERI	TERM
Medical history: have you ever had:			
Personal history of:			
Is your work exposure history current (OPNAV 5100/15)	Yes	Bienn	No
Major illness or injury	Yes	Bienn	No
Hospitalization or surgery	Yes	Bienn	No
Cancer	Yes	Bienn	No
Back injury	Yes	Bienn	No
Do you drink 6 or more drinks per week (beer, wine, liquor)	Yes	Bienn	No
Have you ever smoked	Yes	Bienn	No
Do you currently smoke (packs/day)	Yes	Bienn	No
Heart disease, high blood pressure, or stroke	Yes	Bienn	No
Current medication use (prescription or OTC)	Yes	Bienn	No
Medication allergies	Yes	Bienn	No
Any reproductive health concerns	Yes	Bienn	No
Lung/resp disease (ex: COPD, bronchitis, pneumonitis)	Yes	Bienn	No
Syphilis or gonorrhea	Yes	Bienn	No
Headache, dizziness, light-headedness, weakness	Yes	Bienn	No
Nervous stomach or ulcer	Yes	Bienn	No
Head injury	Yes	Bienn	No
Change or loss of vision	Yes	Bienn	No
Loss or change in hearing	Yes	Bienn	No
Chest pain, angina, heart attack	Yes	Bienn	No
Repeated episodes of loss of or near loss of consciousness	Yes	Bienn	No
Kidney disease	Yes	Bienn	No
Epilepsy (seizure disorder)	Yes	Bienn	No
Problems with balance and coordination	Yes	Bienn	No
Problems with numbness, tingling, weakness in hands or feet	Yes	Bienn	No
Migraine headache	Yes	Bienn	No
Diabetes or other endocrine gland disorder	Yes	Bienn	No

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EXAM ELEMENT	BASE	PERI	TERM
Mental/emotional illness	Yes	Bienn	No
Depression, diff concentrating, excessive anxiety	Yes	Bienn	No
Treatment for drug or alcohol use	Yes	Bienn	No
Personality change	Yes	Bienn	No
Muscle or joint problems	Yes	Bienn	No
Permanent defect from illness, disease or injury	Yes	Bienn	No
Family history of:			
Heart disease, high blood pressure, or stroke	Yes	Bienn	No
Comments on medical history:	Yes	Bienn	No
Laboratory:			
Serum chemistry:			
Baseline lipid profile	Yes	No	No
Urinalysis:			
Routine:			
Urinalysis	Yes	Bienn	No
Additional lab tests:			
EKG/lipid profile done once past age 40?	Yes	*	No
Cardiology:			
Baseline electrocardiogram	Yes	No	No
Audiology:			
Audiogram	Yes	Bienn	No
Optometry:			
Vision screen (visual acuity)	Yes	Bienn	No
Color vision	Yes	Bienn	No
Visual fields	Yes	Bienn	No
Comments on laboratory results:	Yes	Bienn	No
Physical examination:			
Vital signs	Yes	Bienn	No
Special attention in examination to:			
Central nervous system	Yes	Bienn	No
Peripheral nervous system (strength, sensation, DTR)	Yes	Bienn	No
Back & musculoskeletal system	Yes	Bienn	No
Extremities	Yes	Bienn	No
Cardiovascular system	Yes	Bienn	No
Peripheral vascular system (Reynaud's)	Yes	Bienn	No
Eyes	Yes	Bienn	No
Abdomen	Yes	Bienn	No
Genitourinary tract	Yes	Bienn	No
Respiratory system	Yes	Bienn	No
Ears (tympanic membranes)	Yes	Bienn	No
Overall physical fitness	Yes	Bienn	No
Other appropriate examination (specify)	Yes	Bienn	No
Comments on physical examination:	Yes	Bienn	No
Is surveillance/PPE consistent with exposures	Yes	Bienn	No
Are any abnormalities related to exposures/occupations	Yes	Bienn	No

	EXAM ELEMENT	BASE	PERI	TERM
Recommendations:		Yes	Bienn	No

*Waivers pertain only to crane operators.

PROGRAM DESCRIPTION:

Military personnel are exempt from the requirements of the Commercial Motor Vehicle Safety Act of 1986, and, in particular, from the requirements of 49 CFR Part 383 regarding physical examination requirements in order to obtain a commercial drivers license. The scope of the periodic examination is considered sufficient to meet the requirements. Waivers for previously qualified operators are authorized by activity Commanding Officers after appropriate medical and management review - see reference 1.

PROVIDER COMMENTS:

REFERENCES:

1. NAVFAC P-307
2. 49 CFR 391.41-49.

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Chapter 8:

C8. Reviews and Revisions

The following list of stressors was reviewed and not included in the Medical Matrix. Any questions or concerns should be addressed to Committee members or Occupational Medicine staff at NMCPHC. The list will be reviewed periodically and updated.

	STRESSOR	DATE REVIEWED
	Acetone	Dec 1989
	Asphalt Fumes	Dec 1989
	Benzo(a)pyrine	Dec 1989
	Crysene	Dec 1989
	Fungicides	Nov 1990
	N-heptane	Dec 1989
	N-Hexane	Dec 1989
	Petroleum distillates (kerosene, Stoddard Solvent, Naphtha, Mineral Spirits)	Dec 1989
	Silver	Dec 1989

On further review for chronic effects and evaluation of usage, these programs were removed from the Medical Matrix. Solvents were included in Program #603, Mixed Solvents, and program #157 was combined with an existing program. The program numbers will be retained for historical purposes.

107	Ammonia	Aug 1990
119	Benzoyl Peroxide	Aug 1990
120	Benzyl Chloride	Aug 1990
123	2-Butanone (Methyl Ethyl Ketone)	Aug 1990
129	Chlorine	Aug 1990
136	Cyclohexanone	Aug 1990
144	Ethyl Butyl Ketone	Aug 1990
147	Ethylene Glycol	Aug 1990
153	Glycol Ethers (other than ethoxy and methoxy ethanol)	Aug 1990
212	N-Heptane	Aug 1990
154	Hexone	Aug 1990
157	Hydrogen Fluoride (Combined with #150)	Aug 1990
160	Isopropyl Alcohol	Aug 1990
164	Methyl (N-Amyl) Ketone	Aug 1990
165	Methyl Alcohol	Aug 1990
169	Morpholine	Aug 1990
101	Nuisance Dusts	Aug 1990
181	2-Pentanone (Methyl Propyl Ketone)	Aug 1990
182	Phenol	Aug 1990
183	Phosgene	Aug 1990
504	Radiation- Infrared, UV and visible	Apr 1995

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507	Radiation-Radiofrequency & Microwave	Apr 1995
188	Sodium Hydroxide	Aug 1990
193	TMPP (Trimethylolpropane Phosphate)	Aug 1990
199	Triorthocresylphosphate (TOCP)	Aug 1990
200	Tungsten (merged with #208)	Feb 1994
201	Vanadium	Feb 1994
202	Vinyl Acetate	Aug 1990
206	Zinc Oxide	Aug 1990

Chapter 9:

C9. General References

Zenz C, Dickerson BO, Horvath EP (eds). *Occupational Medicine*, 3rd Ed. St. Louis: Mosby, 1994.

Rom WN (ed). *Environmental & Occupational Medicine*, 3rd Ed. Philadelphia: Lippincott-Raven, 1998.

Hathaway GJ, Proctor NH (eds). *Proctor and Hughes' Chemical hazards of the workplace*. 5th ed. New York: Van Nostrand Reinhold; 2004.

Sullivan JB, Krieger GR (eds). *Clinical Environmental Health and Toxic Exposures*. Philadelphia: Lippincott Williams & Wilkins, 2001.

Rosenstock L, Cullen MR, Brodtkin CA, Redlich CA (eds). *Textbook of Clinical Occupational and Environmental Medicine*, 2nd Ed. Philadelphia: Elsevier Saunders, 2004.

LaDou J (ed). *Current Occupational & Environmental Medicine*, 3rd Ed. New York: McGraw-Hill, 2004.

DiNardi SR (ed). *The Occupational Environment: Its Evaluation, Control and Management*. 2nd Ed. Fairfax: American Industrial Hygiene Assoc, 2003.

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Chapter 10

C10. Sample Letters

C10.1. Suggested or Requested Changes in the Medical Matrix

The following page is a form that may be used to request a change to the Medical Matrix. Use of the form is not required. However, the information referred to in the form should be included when submitting a request. (A copy in Adobe Acrobat© format that may be filled out and submitted online is available on the Matrix page of the NMCPHC Occupational and Environmental Medicine Web site.)

Medical Matrix Improvement Request

(Use of this form is not necessary as long as the requested information is included.)

Originator (name)	Date
Address	E-mail
	Telephone (COM)
	Telephone (DSN)

This is a request for a CHANGE in a current program.

Name of program or stressor

Recommendation (include supporting references, if any)

This is a request for the ADDITION of a new program.

Recommendation (include references and a description of the program)

Mail to:
ATTN: OEM Medical Matrix Committee
Navy and Marine Corps Public Health Center
620 John Paul Jones Circle, Suite 1100
Portsmouth, VA 23708-2111

Or fax:
757-953-0787

Or email the above info:
occmed@nehc.mar.med.navy.mil

C10.2. Physician's/Provider's Written Opinion Samples

On the following pages are samples of physician's/provider's written opinions required by OSHA for certain programs. The physician's/provider's written opinion contains the results of the medical examination and the following:

1. The physician's/provider's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of health impairment from continued exposure to the particular hazard.
2. Any recommendations for limitations on the employee or for use of personal protective equipment.
3. A statement that the employee has been informed of the results of the medical evaluation and about any medical conditions resulting from exposure to the particular hazard.

The physician's/provider's written opinion is given to the employee's command and therefore must not reveal specific findings or diagnoses unrelated to occupational exposure to the hazards.

Sample Physician's/provider's Written Opinions are given for the following.

[Asbestos Medical Surveillance Program](#)
[Hazardous Waste Workers and Emergency Responders](#)
[Notice of Significant Threshold Shift](#)
[Occupational Exposure to Blood and/or Body Fluids](#)
[Occupational Exposure to Butadiene](#)
[Occupational Exposure to Cadmium](#)
[Occupational Exposure to Ethylene Oxide](#)
[Occupational Exposure to Formaldehyde](#)
[Occupational Exposure to Lead](#)
[Occupational Exposure to Methylene Chloride](#)
[Occupational Exposure to Methylenedianiline.](#)

NMCPHC-TM OM 6260
 ASBESTOS MEDICAL SURVEILLANCE PROGRAM

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to current guidelines regarding exposure to asbestos. On the basis of this examination the following comments are submitted:
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material health impairment from exposure to asbestos, tremolite, anthophyllite, or actinolite. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.
5. The employee has been counseled regarding the results of this medical evaluation and of any medical conditions resulting from asbestos, tremolite, anthophyllite or actinolite exposure that require further explanation or treatment, as noted by his/her signature below.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
 Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
HAZARDOUS WASTE WORKERS AND EMERGENCY RESPONDERS

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.120 regarding hazardous waste operations or emergency response. On the basis of this examination the following comments are submitted.
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from hazardous waste operations or emergency response. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been counseled regarding the results of this medical evaluation and of any medical conditions that require further evaluation or treatment.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

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NMCPHC-TM OM 6260
NOTICE OF SIGNIFICANT THRESHOLD SHIFT

Name	SSN	Dept/Code

Ref: (a) 29 CFR 1910.95

1. The results of the hearing test provided to you as part of the Navy Hearing Conservation Program indicate that you may have suffered deterioration in your hearing sensitivity. This condition is referred to as a Significant Threshold Shift (STS). Because of the test results, you have been or will be scheduled for one or more hearing tests to confirm the findings. Also, you may be given a medical examination to determine the probable cause of the STS. This written notification is presented under the requirements of reference (a).
2. Audiometric technicians have provided you with properly fitted hearing protection devices and given you a reindoctration of the Hearing Conservation Program requirements. In addition, the following steps have been taken in response to your change in hearing:

- _____ Follow-up Audiogram(s)
- _____ Medical Consultation
- _____ Referral to Audiologist
- _____ Other:

3. In order to preserve your hearing, it is very important that you wear your hearing protection at all times when in areas identified as noise hazardous or in the vicinity of noise hazardous tools, weapons or operations.

I HAVE READ AND UNDERSTAND THE ABOVE INFORMATION:

(patient's signature)	(date)

(Audiometric Technician's Signature and Stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO BLOOD AND/OR BODY FLUIDS

HEALTHCARE PROFESSIONAL'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to current guidelines regarding exposure to blood and/or body fluids. On the basis of this examination the following comments are submitted:
2. There ARE/ARE NOT recommended limitations upon the employee's ability to receive hepatitis B vaccination. Limitations, if recommended, are based on the following findings:
3. The employee has been informed of the results of this medical evaluation and about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO BUTADIENE

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

--	--	--

Name

SSN

Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.1051 regarding occupational exposure to butadiene. On the basis of this examination the following comments are submitted.
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to butadiene. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure to butadiene.
4. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
5. The employee has been counseled regarding the results of this medical evaluation, and of any medical conditions resulting from butadiene exposure that require further evaluation or treatment.
6. Next biological monitoring or medical examination scheduled for _____ (date)

--	--

(employee's signature)

(date)

--	--

(examiner's signature and stamp)

(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

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NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO CADMIUM

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

--	--	--

Name

SSN

Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.1027 regarding occupational exposure to cadmium. On the basis of this examination the following comments are submitted.
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to cadmium. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been counseled regarding the results of this medical evaluation, including results of biological monitoring, and of any medical conditions resulting from cadmium exposure that require further evaluation or treatment, and any limitation on the employee's diet or use of medications.
5. Next biological monitoring or medical examination scheduled for _____ (date)

--	--

(employee's signature)

(date)

--	--

(examiner's signature and stamp)

(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO ETHYLENE OXIDE

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.1047 regarding occupational exposure to ethylene oxide. On the basis of this examination the following comments are submitted:
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to ethylene oxide. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been counseled regarding the results of this medical evaluation and of any medical conditions resulting from ethylene oxide exposure that require further evaluation or treatment.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO FORMALDEHYDE

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to current guidelines regarding exposure to formaldehyde. On the basis of this examination the following comments are submitted:
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to formaldehyde. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been counseled regarding (1) the results of this medical evaluation, (2) any medical conditions which would be aggravated by exposure to formaldehyde or which may have resulted from past formaldehyde exposure or from exposure in an emergency, and (3) whether there is a need for further examination or treatment.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO LEAD

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.1025 regarding occupational exposure to lead. On the basis of this examination the following comments are submitted:
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to lead. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been counseled regarding the results of this medical evaluation and of any medical conditions resulting from lead exposure that require further evaluation or treatment.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO METHYLENE CHLORIDE

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.1052 regarding occupational exposure to methylene chloride. On the basis of this examination the following comments are submitted:
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to methylene chloride. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been informed that methylene chloride is a potential occupational carcinogen;
5. The employee has been informed of risk factors for heart disease and the potential for exacerbation of underlying heart disease by exposure to methylene chloride through its metabolism to carbon monoxide;
6. The employee has been counseled regarding the results of this medical evaluation and of any medical conditions resulting from methylene chloride exposure that require further explanation or treatment, as noted by his/her signature below.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974

NMCPHC-TM OM 6260
OCCUPATIONAL EXPOSURE TO METHYLENEDIANILINE

PHYSICIAN'S/PROVIDER'S WRITTEN OPINION in the case of:

Name	SSN	Dept/Code

1. The above noted individual was examined according to 29 CFR 1910.1050 regarding occupational exposure to cadmium. On the basis of this examination the following comments are submitted:
2. A medical condition WAS/WAS NOT detected that would place the employee at an increased risk of material impairment of health from exposure to methylenedianiline. Comments (if applicable):
3. Limitations ARE/ARE NOT recommended on this individual's exposure or use of personal protective equipment, including respirators. Comments (if applicable):
4. The employee has been counseled regarding the results of this medical evaluation and of any medical conditions resulting from methylenedianiline exposure that require further explanation or treatment, as noted by his/her signature below.

(employee's signature)	(date)

(examiner's signature and stamp)	(date)

Original: employer
Copies: employee
 medical record
 cognizant Industrial Hygienist (IH) (if indicated)

THIS LETTER IS PROTECTED BY THE PRIVACY ACT OF 1974