

Industrial Hygiene Field Operations Manual (IHFOM)
Record of Changes

Chapter	Paragraph	Description	File Date*
Chapter 4	8g(1)	Changed the interpretation of a UTL _{95%,95%} that exceeds the OEL.	27 Jun 2000
Chapter 9	3a(7)	Discussed the use of air-purifying respirators for isocyanates and other stressors with poor warning properties when a cartridge change out schedule is established and implemented.	15 Sep 2000
Chapter 9	8b(4)	Added reference to cartridge change out schedules.	15 Sep 2000
Chapter 9	12d(6)	Directed the user to one source of guidance for cartridge change out schedules.	15 Sep 2000
Chapter 9	12e	Added absence of a cartridge change out schedule, and an end-of-service-life indicator as instances requiring use of a supplied-air respirator instead of an air-purifying respirator.	15 Sep 2000
Chapter 9	17	Updated reference 9-11 citation to reflect year of current edition.	15 Sep 2000
Chapter 3 Appendix 3-A	As marked in left margin	Added or changed the wording of Operation Codes (OPCODEs) to be used with IHIMS	15 Sep 2000
Appendix A, Table Z-3	All	Deleted since these were only Transitional Limits and the Navy adopted the Final Limits of the OSHA 1989 rulemaking	14 Dec 2000
Appendix A, Cover	Cover	Deleted Table Z-3 from cover page.	14 Dec 2000
Appendix A, Table Z-1A	Diisopropylamine, Cotton dust, Ethyl formate, Ethylene glycol	Corrected spelling for diisopropylamine, moved cotton dust TWA value to the proper column (to mg/m ³ from ppm), deleted values under STEL for ethyl formate, moved ceiling values for ethylene glycol to the proper columns, moved fluoride TWA value to the proper column (to mg/m ³ from ppm) and added in “-“ in blank columns.	15 Aug 2001
Appendix A, Table Z-2	Ethylene dichloride	Deleted ethylene dichloride since it is covered under Table Z-1A.	15 Aug 2001
Chapter 3, Appendix 3-B	2f(2)	Added a note about cleaning the templates for wipe sampling.	16 Aug 2001
Chapter 3, Appendix 3-B	2 through 7	Fixed the numbering of the main paragraphs, beginning with Single Surface Wipe Sampling Procedure through Quality Assurance/Quality Control.	16 Aug 2001

Chapter	Paragraph	Description	File Date*
Chapter 3, Appendix 3-B	All	Added dimension examples to wipe areas or template areas.	16 Aug 2001
Chapter 3, Appendix 3-B	All	Fixed inconsistencies in capitalization in some of the headers.	16 Aug 2001
Chapter 3, Appendix 3-B	All	Fixed inconsistencies in square foot abbreviations.	16 Aug 2001
Appendix B, Table 1	All	Added a Table for Navy adopted OELs – Fuels and MMVF. This table was included for guidance purposes only.	23 Aug 2001
Appendix A, Table Z-1A	Tetryl	Changed Tetryl PEL from 15 to 1.5 mg/m ³ .	23 Aug 2001
Appendix A, Table Z-1A	All	Properly matched up the footnotes.	23 Aug 2001
Appendix B, Cover	Cover	Added a cover page for the Table for Navy adopted OELs – Fuels and MMVF.	27 Aug 2001
Table of Contents	Appendix B	Added Appendix B Table 1 for Navy adopted OELs to the Table of Contents.	27 Aug 2001
Chapter 4	5c	Added a reference to the new Appendix B Navy adopted OELs.	27 Aug 2001
Appendix A, Table Z-1A	All	Made sure the footnote verbiage matched OSHA TABLE Z-1A.	28 Aug 2001
Appendix A, Cover	Cover	Deleted Table Z-3 from cover page again. (Previous change not posted to the web.)	05 Feb 2002
Record of Changes	File Date	Added a footnote explaining that the file date is the date the files were created or updated, and that this date may not reflect the actual effective date of posting to the Navy Environmental Health Center (NEHC) website.	07 Feb 2002
Chapter 3 Appendix 3-A	4	Updated the OPCODE dictionary. Added a table showing what was added or changed.	26 Mar to 16 Apr 2002
Chapter 13 Appendix 13-F	4	Corrected referral to reference by changing it from 12F-4 to 13F-4.	04 Apr 2002

Chapter	Paragraph	Description	File Date*
Sampling Forms	All	Updated recreated sampling forms to include the fields used in the eNOED project.	05 Apr to 17 Apr 2002
Sampling Forms Definitions	All	Updated recreated sampling forms definitions to include all the fields for all of the new forms. Added explanations for the use for all of the new forms and added hyperlinks to the forms.	05 Apr to 26 Apr 2002
Chapter 8	14a and 14b	Added the statements that the anemometer should be qualitatively checked to ensure that it is in good working condition.	08 Apr 2002
Chapter 5	11	Updated and expanded the information on the certification of audiometric booths.	08 Apr 2002
Chapter 5 Appendix 5-B	All	Changed Appendix 5-B to include links to the medical surveillance audiometric booth certification form and the clinical audiometric booth certification form in the NEHC Field Guide to Audiometric Test Booth Certification.	08 Apr 2002
Chapter 12	4b(3)(d)	Clarified why atmosphere-supplying respirators must be worn when oxygen concentrations are below 19.5%.	08 Apr 2002
Chapter 3	1c, 1d and 1g	Updated the definitions for ceiling, excursion limit and short-term exposure limit.	09 Apr 2002
Chapter 3	All	Corrected and updated references.	09 Apr 2002
Chapter 3	15b through 15d	Added information on calibration and limitations for direct reading gas monitors, direct reading dust monitors and other direct reading instruments.	11 Apr 2002
Chapter 5	12	Updated the references.	12 Apr 2002
Chapter 8	10 through 13	Added information on calibration for direct reading gas monitors, direct reading dust monitors and other direct reading instruments.	12 Apr 2002
Chapter 5	11	Further updated and expanded the information on the certification of audiometric booths.	16 Apr 2002
Chapter 3, Appendix 3-A	1 through 3	Corrected and/or updated hyperlinks.	29 Apr 2002
Chapter 5 Appendix 5-A	1	Corrected and/or updated hyperlinks.	29 Apr 2002

Chapter	Paragraph	Description	File Date*
Chapter 5, Appendix 5-B	1	Corrected and/or updated hyperlinks.	29 Apr 2002
Chapter 9	3 through 12	Corrected and/or updated hyperlinks.	29 Apr 2002
Chapter 14	3	Corrected and/or updated hyperlinks.	29 Apr 2002
Appendix B, Table 1	References	Corrected and/or updated hyperlinks.	29 Apr 2002
Chapter 7	1	Added a reference to the new asbestos fiber counting form and the new asbestos bulk sample analysis form.	16 May 2002
Chapter 7, Appendix 7-A	All	Added Appendix 7-A with hyperlinks to the new asbestos fiber counting form and the new asbestos bulk sample analysis form.	16 May 2002
Sampling Forms	Asbestos Fiber Counting Form and Asbestos Bulk Sample Analysis Form	Modified these Navy Consolidated Industrial Hygiene Laboratory (CIHL) forms, originally developed by San Diego CIHL, to make them generic for use by any laboratory.	16 May 2002
Chapter 5	3b	Corrected the requirement for how long noise measurement records must be kept by changing it from the incorrect 50 years to the correct 40 years as is referenced in OPNAVINST 5100.23 Series.	16 May 2002
Chapter 5	12	Corrected reference 5-1 OPNAVINST 5100.23 Series from the incorrect Chapter 18 to the correct Chapter 8, <i>Hearing Conservation and Noise Abatement</i> .	16 May 2002
Chapter 1	4	Updated the NEHC address.	20 Jun 2002
Chapter 8	4b(3)	Updated the NEHC address.	20 Jun 2002
Chapter 4	4a	Corrected reference from 401a to 4-1.	07 Oct 2002
Chapter 3	1e	Corrected reference from the incorrect Chapter 8 of OPNAVINST 5100.23 Series to the correct Chapter 16 of OPNAVINST 5100.23 Series.	17 Oct 2002
Chapter 4	2m	Corrected reference from the incorrect Chapter 8 of OPNAVINST 5100.23 Series to the correct Chapter 16 of OPNAVINST 5100.23 Series.	17 Oct 2002
Chapter 3, Appendix 3-A	1 through 3	Corrected and/or updated hyperlinks.	17 Oct 2002

Chapter	Paragraph	Description	File Date*
Chapter 5 Appendix 5-A	1	Corrected and/or updated hyperlinks.	17 Oct 2002
Chapter 4	5a(2)	Added invitation to contact NEHC regarding dermal exposure assessment.	19 Nov 2002
Chapter 3	17b(3)	Updated information on wipe sampling techniques.	17 Dec 2002
Chapter 10	11b(4)	Corrected and/or updated hyperlinks.	17 Dec 2002
Chapter 7, Appendix 7-A	1	Corrected and/or updated hyperlinks.	17 Dec 2002
Chapter 9	All	<p>The revision includes many new internet hypertext links to sources of in depth information, including the following topics: written standard operating procedures (SOPs) including downloading of a generic respirator SOP; NIOSH/NIST/SBCCOM development of approval schedules for testing and certifying air purifying respirators as protection against chemical, biological, and radiological (CBR) warfare agents; respirator cartridge change out schedules; compressed breathing air, including methods for testing breathing air quality; NIOSH approval of self-contained breathing respirators for emergency workers in terrorist attacks; NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84; respirator homepage article expounding upon the logic for exempting AABA from quarterly breathing air quality testing; NIOSH approval of Breath Responsive PAPRs; along with several more.</p> <p>Several topics were expounded upon, including: respirator selection for use in oxygen deficient atmospheres; calculation of effective protection factors; respirator cleaning procedures using bleach and iodine; medical evaluation of respirator users; color coding for air purifying respirator cartridges and filters; explanation of why all nine classes of particulate filtered respirators approved by NIOSH are protective against Anthrax bacilli and spores; list of filter degrading oils; methods for calculating change out schedules for particulate filtering respirators; powered air purifying respirators; and chemical cartridge sorbent materials.</p>	19 Dec 2002
Sampling Forms	All	Updated sampling forms to show non-required fields. This will aid the users in knowing what needs to be filled in.	28 Apr 2003

Chapter	Paragraph	Description	File Date*
Sampling Forms Definitions	All	Created a separate specific sampling forms definitions sheet for each sampling form. This makes it easier for the user to look up the definitions when they are filling in samplings forms. The new sampling forms definitions sheets show and explain which fields are required and optional. This will aid the users in knowing what needs to be filled in.	24 Apr to 28 Apr 2003
Chapter 5	11	Further updated and expanded the information on the certification of audiometric booths.	9 Jul 2003
Chapter 5, Appendix 5-B	1	Corrected and/or updated hyperlinks.	9 Jul 2003
Appendix B, Table 1	All	Removed Table for Navy adopted OELs – Fuels and MMVF. This was done since there now are ACGIH TLVs for these stressors. Consult the hierarchy of standards in OPNAVINST 5100.23 series Chapter 16.	25 Jul 2003
Appendix B, Cover	Cover	Removed the cover page for the Table for Navy adopted OELs – Fuels and MMVF. See above.	25 Jul 2003
Table of Contents	Appendix B	Removed Appendix B Table 1 for Navy adopted OELs from the Table of Contents. See above.	25 Jul 2003
Chapter 4	5c	Removed the reference to the new Appendix B Navy adopted OELs. See above.	25 Jul 2003
Chapter 13	All	Revised and updated the Indoor Environmental Quality (formerly Indoor Air Quality) Chapter 13.	28 Oct 2003
Table of Contents	Chapter 13	Changed Chapter 13's name from Indoor Air Quality to Indoor Environmental Quality.	28 Oct 2003
PPE Codes	All	Updated and added a few PPE Codes.	21 Nov 2003
Chapter 3	10b/10c	Moved old 10b to 10c.	08 Jan 2004
Chapter 3	10b	Added a new discussion on estimating overall precision of a sampling and analytical method when S_{rT} is not provided.	08 Jan 2004
Chapter 3	18	Added a new reference 3-10 (3-11 when the update was posted to the NEHC website) and moved existing references.	08 Jan 2004
Chapter 3	11c through 11f	Added additional information on inhalable and total aerosol sampling.	27 Jan 2004
Chapter 5	10c	Updated the NEHC address.	28 Jan 2004
Chapter 8	4b(1)	Updated information on equipment that is calibrated at the NEHC Calibration Laboratory.	28 Jan 2004
Chapter 8	16, 18 and Table 8-2	Added information on equipment lifecycle service life.	28 Jan 2004

Chapter	Paragraph	Description	File Date*
Chapter 4	2c, 8a(1) and 8a(2)	Added clarification regarding the use of censored data when doing population statistics on groups of STEL/Ceiling results.	13 Feb 2004
Chapter 2	3a(4)	Added ergonomics as a physical stressor.	13 Feb 2004
Chapter 2, Appendix 2-A	3c and 4c	Added ergonomics as a program.	13 Feb 2004
Chapter 3	8c	Added information on NEHC reviewing breathing zone sampling forms sent to the CIHLs for analysis for accuracy and completeness and referenced the Bureau of Medicine and Surgery (BUMED) Industrial Hygiene Data Quality letter.	13 Feb 2004
Chapter 3	18	Added a new reference 3-9 and moved existing references.	13 Feb 2004
Chapter 3 Appendix 3-A	4	Updated the OPCODE dictionary and the table showing what was added or changed.	23 Feb 2004
Chapter 3	12b	Added information on consulting the analytical method being used for specific requirements during gravimetric analysis.	31 Mar 2004
Exposure Monitoring Form	All	Converted the OPNAV 5100\14 Exposure Monitoring Plan form to a new NEHC Form - 5100\21 Exposure Monitoring Plan.	20 May 2004
Chapter 4	7	Added link to Exposure Monitoring Plan – NEHC Form 5100\21 (Formerly OPNAV 5100\14).	20 May 2004
Chapter 5, Appendix 5-B	1	Corrected and/or updated hyperlinks.	01 Jul 2004
Chapter 7	6g	Added wording clarifying the need for formal classroom training in polarized light microscopy (PLM)/dispersion staining.	12 Jul 2004
Exposure Monitoring Form	All	Removed the new NEHC - 5100\21 Exposure Monitoring Plan form since it will remain in the OPNAVINST 5100.23 Series as the OPNAV 5100\14 Exposure Monitoring Plan form.	31 Aug 2004
Chapter 4	7	Removed link to new NEHC - 5100\21 Exposure Monitoring Plan form.	31 Aug 2004
Chapter 13	Introduction and 13.5	Added 13.5 Risk Communication and Mold to the Indoor Environmental Quality Chapter 13.	15 Dec 2004

Chapter	Paragraph	Description	File Date*
Chapter 2 and Appendix 2-A	References and Appendix 2-A 3d(1)(h) and 2d(1)(g)	Added a new reference 2-3 (NEHC technical manual for reproductive hazards).	03 Aug 2005
Chapter 5	11f	Updated paragraphs to remove outdated equipment.	03 Aug 2005
Chapter 5	12	Updated references to reflect current editions.	03 Aug 2005
Chapter 3	16f	Added information needed to be recorded to look up sampling rates/uptake rates for passive monitors.	26 Jan 2006
Appendix A, Table Z-1A	Hexavalent Chromium and Chromates	Updated the Table Z-1A with respect to the new Hexavalent Chromium standard 29 CFR 1910.1026.	30 Jun 2006
Appendix A, Table Z-2	Hexavalent Chromium and Chromates	Updated the Table Z-2 with respect to the new Hexavalent Chromium standard 29 CFR 1910.1026.	30 Jun 2006
Chapter 8	Table 8-1	Deleted annual requirement for laboratory calibration of Toxic Gas Meters. Added information to the table regarding the manufacturers' requirements taking precedence.	30 Jun 2006
Sampling Forms	Industrial Hygiene Noise Survey Form NEHC 5100/17	Updated the Industrial Hygiene Noise Survey Form NEHC 5100/17. A Measurement Location field was added to describe and document the actual location where the noise measurement was taken. Also, additional guidance on taking a Noise Hazardous Radius measurement at 84 dBA and 104 dBA, where needed, was added.	03 Jul 2006
Sampling Forms Definitions	Industrial Hygiene Noise Survey Form NEHC 5100/17 Explanations and Definitions	Updated the Industrial Hygiene Noise Survey Form NEHC 5100/17 Explanations and Definitions. A Measurement Location field definition was added so that the actual location where the noise measurement was taken could be described and documented. Also, additional guidance on taking a Noise Hazardous Radius measurement at 84 dBA and 104 dBA, where needed, was added.	03 Jul 2006
Appendix A, Table Z-2	Carbon disulfide	Deleted Carbon disulfide since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Carbon tetrachloride	Deleted carbon tetrachloride since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Formaldehyde	Deleted formaldehyde since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Hydrogen fluoride	Deleted hydrogen fluoride since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Hydrogen sulfide	Deleted hydrogen sulfide since it is covered under Table Z-1A.	05 Jul 2006

Chapter	Paragraph	Description	File Date*
Appendix A, Table Z-2	Mercury	Deleted mercury since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Methyl chloride	Deleted methyl chloride since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Organo (alkyl) mercury	Deleted organo (alkyl) mercury since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Styrene	Deleted styrene since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Tetrachloroethylene	Deleted tetrachloroethylene since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Toluene	Deleted toluene since it is covered under Table Z-1A.	05 Jul 2006
Appendix A, Table Z-2	Trichloroethylene	Deleted trichloroethylene since it is covered under Table Z-1A.	05 Jul 2006
Chapter 8	4b(1)(d)	Added to noise dosimeters that NEHC calibrates the Quest models M7B, M14, M15, M27, M28, Q100, Q220P, Q300, Q300, Q400, Q500 and Quest Noise Pro DL/DLX.	06 Jul 2006
Chapter 5	3a(2)	Updated paragraphs to specify the settings necessary for noise dosimeters that require programming of an upper limit, to recommend datalogging capability in noise dosimeters, and to specify that any new purchases of noise dosimeters be capable of programming for a 3dB exchange rate as well as the 4dB exchange rate currently required by the Navy.	06 Jul 2006
Chapter 5	3b	Added the OPNAVINST 5100.19 Series requirement for keeping noise measurement records for 50 years. Referred to the SECNAV M-5210.1 Series requirements for records retention.	07 Jul 2006
Chapter 5	12	Added the SECNAV M-5210.1 Series reference as reference 5-3 Updated the references.	07 Jul 2006
Chapter 2	3c	Added information on records retention and records disposition	07 Jul 2006
Chapter 2	5	Updated reference 2-2 to the new SECNAV M-5210.1 Series	07 Jul 2006
Chapter 9	3a(5)	Removed the reference to the old Appendix B Navy adopted OELs.	07 Jul 2006
Chapter 3	All	Change limit of detection or LOD to limit of quantification or LOQ.	11 Jul 2006
Chapter 4	All	Change limit of detection or LOD to limit of quantification or LOQ.	11 Jul 2006
Chapter 7	All	Change limit of detection or LOD to limit of quantification or LOQ.	11 Jul 2006

Chapter	Paragraph	Description	File Date*
Sampling Forms	Industrial Hygiene Survey Forms: NEHC 5100/13 NEHC 5100/14 NEHC 5100/15a NEHC 5100/15b NEHC 5100/16	Change limit of detection or LOD to limit of quantification or LOQ.	12 Jul 2006
Sampling Forms Definitions	Industrial Hygiene Explanations and Definitions for Survey Forms: NEHC 5100/13 NEHC 5100/14 NEHC 5100/15a NEHC 5100/15b NEHC 5100/16	Change limit of detection or LOD to limit of quantification or LOQ. Removed the reference to the old Appendix B Navy adopted OELs.	12 Jul 2006
Sampling Forms	Industrial Hygiene Survey Forms: NEHC 5100/13 NEHC 5100/14 NEHC 5100/15a NEHC 5100/15b NEHC 5100/18 NEHC 5100/19 NEHC 5100/20	Add For Official Use Only statement for Privacy Act information.	03 Aug 2006
Chapter 3 Appendix 3-A	4	Updated the OPCODE dictionary and the table showing what was added or changed.	21 Feb 2007
Sampling Forms	All	Updated sampling forms to accommodate Navy Comprehensive Industrial Hygiene Laboratory (CIHL) reports. This removed many of the fields filled in by the laboratories. Updated the sampling forms for samples that do not go to the laboratories to standardize the look of the forms.	21 Feb 2007
Sampling Forms Definitions	All	Updated sampling forms definitions to accommodate Navy CIHL reports. This removed many of the fields filled in by the laboratories. Updated the sampling forms definitions for samples that do not go to the laboratories to standardize the look of the forms definitions.	21 Feb 2007
Sampling Forms	Industrial Hygiene Survey Forms: NEHC 5100/13 NEHC 5100/14 NEHC 5100/15a NEHC 5100/15b NEHC 5100/18 NEHC 5100/19 NEHC 5100/20	Updated the Privacy Act Statement at the end of the survey forms for personal sampling data. This was done to meet Privacy Act requirements. This statement is now a required field on survey forms for personal sampling data. However, signature of the sampled employee is no longer required	05 Jul 2007

Chapter	Paragraph	Description	File Date*
Sampling Forms Definitions	Industrial Hygiene Explanations and Definitions for Survey Forms: NEHC 5100/13 NEHC 5100/14 NEHC 5100/15a NEHC 5100/15b NEHC 5100/18 NEHC 5100/19 NEHC 5100/20	Updated sampling forms definitions regarding the Privacy Act Statement at the end of the survey forms for personal sampling data.	05 Jul 2007
Sampling Forms	Industrial Hygiene Survey Forms: NEHC 5100/15a NEHC 5100/15b	Based on current naming requirements, I changed the forms' numbers from NEHC 5100/15a to NEHC 5100/15.1 and NEHC 5100/15b to NEHC 5100/15.2	16 Aug 2007
Sampling Forms Definitions	Industrial Hygiene Explanations and Definitions for Survey Forms: NEHC 5100/15a NEHC 5100/15b	Updated the hyperlinks to reflect the number changes to the sampling forms from NEHC 5100/15a to NEHC 5100/15.1 and NEHC 5100/15b to NEHC 5100/15.2.	28 Sep 2007
Chapter 3 Appendix 3-A	1c, 1d, 2c and 2d	Updated the hyperlinks to reflect the number changes to the sampling forms from NEHC 5100/15a to NEHC 5100/15.1 and NEHC 5100/15b to NEHC 5100/15.2.	28 Sep 2007
Chapter 3	12b	Added a Note giving a recommendation for balance specifications for weighing IOM inhalable aerosol samplers	28 Sep 2007
Title Page	Title Page	Added a Note discussing that continual maintenance updates since the last full revision and publication in March 1999 have been made only in electronic format and are available on the IHFOM web page.	28 Sep 2007
Chapter 3 Appendix 3-A	4	Updated the OPCODE dictionary and the table showing what was added or changed.	08 Nov 2007
Entire IHFOM	All	Updated font from Courier to Times New Roman	07 Mar 2008
Entire IHFOM including Appendices, Sampling Forms, Sampling Forms Definitions and webpage links	All	Changed Command name from Navy Environmental Health Center (NEHC) to Navy and Marine Corps Public Health Center (NMCPHC)	07 Mar 2008

Chapter	Paragraph	Description	File Date*
Chapter 13	Sections: 13 Introduction, 13.2, 13.2 Appendix A, 13.2 Appendix B, 13.3, 13.3 Figure 1 (MR Wheel), 13.3 Figure 2, 13.3 Appendix A, 13.4, 13.5 and 13.6	Revised and updated the Indoor Environmental Quality Chapter 13 Introduction, Section 2, Section 3, Section 4, Section 5 and Section 6.	30 Apr 2008 and 08 May 2008
Chapter 5	9	Corrected Noise Reduction Rating (NRR) derating formulas.	19 Sep 2008
Sampling Forms	Industrial Hygiene Survey Forms: NMCPHC 5100/13 NMCPHC 5100/14 NMCPHC 5100/15.1 NMCPHC 5100/15.2 NMCPHC 5100/18 NMCPHC 5100/19 NMCPHC 5100/20	Updated these forms to add a field required by Defense Occupational Environmental Health Readiness System – Industrial Hygiene (DOEHRS-IH) that was not already on the forms: Exposure Origin. (This field is marked as optional since this field would likely only be used by DOEHRS-IH users. However, it would be required for DOEHRS-IH users.)	3 Jun 2008
Sampling Forms Definitions	Industrial Hygiene Explanations and Definitions for Survey Forms: NMCPHC 5100/13 NMCPHC 5100/14 NMCPHC 5100/15.1 NMCPHC 5100/15.2 NMCPHC 5100/18 NMCPHC 5100/19 NMCPHC 5100/20	Updated sampling forms definitions to add a field required by DOEHRS-IH that was not already on the forms: Exposure Origin. (This field is marked as optional since this field would likely only be used by DOEHRS-IH users. However, it would be required for DOEHRS-IH users.)	3 Jun 2008 to 15 Jan 2009

Chapter	Paragraph	Description	File Date*
Chapter 13	Sections: 13 Introduction, 13.1, 13.1 Appendix A, 13.1 Appendix B, 13.1 Appendix C, 13.1 Appendix D, 13.1 Appendix E, 13.1 Appendix F, 13.1 Appendix G, 13.2, 13.2 Appendix A , 13.2 Appendix B, 13.3, 13.3 Appendix A and 13.6	Revised and updated the Indoor Environmental Quality Chapter 13 Introduction, Section 1 and Section 6. Primarily cosmetic changes made to Indoor Environmental Quality Chapter 13 Section 2 and Section 3.	11 Jun 2008 to 15 Jan 2009
Chapter 4	All	General update of Chapter 4.	15 Jan 2009
Chapter 6	2b, 5d and 9 (References)	Added information regarding performing Biological Safety Cabinet surveys.	31 Jan 2009
Chapter 2	3c	Added information regarding performing Biological Safety Cabinet surveys. Updated hyperlinks	31 Jan 2009
Chapter 9 Draft	All	Added draft for an update to Chapter 9. This will not replace the existing Chapter 9 until after full Industrial Hygiene Management review. For a list of changes to Chapter 9 see: Summary of Changes to Draft IHFOM Chapter 9.pdf	08 Jan 2009 to 31 Mar 2009
Chapter 5	All	Updated website links.	21 May 2009
Chapter 8	4b	Updated information on NMCPHC Calibration Laboratory.	15 Jun 2009
Chapter 9 Draft	All	Updated website links.	18 Jun 2009
Chapter 13	Section: 13.6	Checked links, updated resources and added or removed laboratories based upon the current American Industrial Hygiene Association (AIHA) accreditation list to Indoor Environmental Quality Chapter 13 Section 6.	24 Jun 2009
Sampling Forms	All	Updated sampling forms to reflect the requirements of using DOEHRS-IH better.	17 Nov to 18 Nov 2009
Sampling Forms Definitions	All	Updated sampling forms definitions to reflect the requirements of using DOEHRS-IH better.	18 Nov 2009

Chapter	Paragraph	Description	File Date*
Chapter 6	2b	Minor cosmetic change.	18 Nov 2009
Chapter 3 Appendix 3-A	3	Included information on the changeover from using Navy Industrial Hygiene OPCODEs to the Defense Occupational Environmental Health Readiness System (DOEHRS-IH) Process Category/Common Process/Process Method picklists.	18 Nov 2009
Chapter 13	Section: 13.1 Appendix G	Revised and updated the Indoor Environmental Quality Chapter 13 Section 1 Appendix G standards, checked links and updated references resources.	18 Nov 2009
Chapter 13	Sections: 13.1, 13.2, 13.2 Appendix A and 13.3	Revised and updated the Indoor Environmental Quality Chapter 13 Section 1, Section 2, Section 2 Appendix A and Section 3 with information from the new World Health Organization and New York City guidelines, checked links and updated references resources.	18 Nov 2009
Chapter 5	All	Updated the chapter to reflect changes in Navy noise policy due to be released in OPNAVINST 5100.23H.	29 Jan 2010
Chapter 5 Appendix 5-B and Audiometric Booth Certification Forms	All	Updated links to audiology test booth certification forms. Updated the audiology test booth certification forms to include the latest references and to be fillable .pdf forms.	27 Jul 2010
Chapter 5	11a	Changed the requirement of ambient noise levels in audiometric test booths needing to be at least 10dB below the maximum allowable sound pressure levels/maximum permissible ambient noise levels (MPANLs) to needing to be only 3dB below. This was due primarily to the feasibility of finding Type 1 Sound Level Meters to measure that low.	8 Sep 2010
Chapter 5	11c	Changed the requirement of needing to be able to measure to 10dB below the maximum allowable sound pressure levels /maximum permissible ambient noise levels (MPANLs) for audiometric test booth certification to needing to be able to measure only 3dB below. This was due primarily to the feasibility of finding Type 1 Sound Level Meters to measure that low.	8 Sep 2010
Sampling Forms	NMCPHC 5100/19 NMCPHC 5100/20	Updated sampling forms.	29 Oct 2010
Sampling Forms Definitions	NMCPHC 5100/19 NMCPHC 5100/20	Updated sampling form definitions.	29 Oct 2010
Chapter 14	1 and 3	Revised and updated the Standardized Afloat Industrial Hygiene Survey Reports with input from the BUMED Regional Industrial Hygiene.	10 Jan 2011

Chapter	Paragraph	Description	File Date*
Chapter 5 Appendix 5-B and Audiometric Booth Certification Form	All	Changed Appendix 5-B to include a link to a new, single, combined audiometric booth certification form and added the new form	12 Apr 2011
Chapter 5	All	Updated hyperlinks.	18 Apr 2011
Title Page	All	Updated hyperlinks.	27 Apr 2011
Chapter 2	All	Updated hyperlinks.	27 Apr 2011
Chapter 3	All	Updated hyperlinks.	27 Apr 2011
Chapter 5	All	Updated hyperlinks and some minor cosmetic changes.	27 Apr 2011
Chapter 7	All	Updated hyperlinks.	27 Apr 2011
Chapter 8	All	Updated hyperlinks.	27 Apr 2011
Chapter 9 Draft	All	Updated hyperlinks.	27 Apr 2011
Chapter 13	Sections: 13 Introduction, 13.1, 13.1 Appendix G, 13.2,13.3, 13.5 and 13.6	Updated hyperlinks.	27 Apr 2011
Sampling Forms Definitions	NMCPHC 5100/13 NMCPHC 5100/14 NMCPHC 5100/15.1 NMCPHC 5100/15.2 NMCPHC 5100/16 NMCPHC 5100/17 NMCPHC 5100/18 NMCPHC 5100/19 NMCPHC 5100/20	Updated hyperlinks.	27 Apr 2011

Chapter	Paragraph	Description	File Date*
Record of Changes	All	Updated hyperlinks.	27 Apr 2011
Audiometric Booth Certification Form	All	Removed IHFOM Chapter 5 revision date, since IHFOM Internet updates can be made at any time and having the date on the form would require the form to be updated anytime Chapter 5 had an update whether it was related to the form or not.	27 Apr 2011
Chapter 13	Section: 13 Introduction	Removed a reference that was in error, mentioning Sections 13.7 and 13.8, which do not exist.	13 Feb 2012
Chapter 3	17 c (3)	Made it generic to metals and not focusing on Lead alone. Referred the reader to the new Appendix 3-B for the Surface Contamination Risk Assessment guide.	21 May to 28 Jun 2012
Chapter 3	18	Removed References 3-17 and 3-18 as they are for lead-based paint assessments in housing. This should not be done by BUMED industrial hygienists unless they are Certified Lead Based Paint (LBP) Inspectors or Risk Assessors and there is a Memorandum of Understanding (MOU) between the housing manager and the Medical Treatment Facility (MTF) to perform this function.	21 May to 28 Jun 2012
Chapter 3, Appendix 3-B	All	Rewrote Appendix 3-B. Originally, it contained information regarding lead wipe sampling for housing. Now, it is the Surface Contamination Risk Assessment guide.	21 May to 28 Jun 2012
Appendix A, Table Z-1A	All	Removed multiple typographical errors in CAS number, exposure limit and skin designations	4 Oct 2012
Appendix A, Table Z-2	Fluoride	Removed Fluoride as dust since it was not cross-referenced in Table Z-1-A, per 29 CFR 1910.1000 7-1-1992 Edition or cross-referenced due to later OSHA 6b single substance standards.	4 Oct 2012
Chapter 3, Appendix 3-B	All	Revised Appendix 3-B. The previous Appendix B detailed a risk assessment process for determining health-based criteria to which wipe sampling results for a specific contaminant could be compared. That has been replaced by a process for collecting wipe samples of metal dusts in sufficient numbers to allow for useful statistical analysis and decision making. This process is <u>specifically</u> focused on sampling in <u>non-industrial</u> areas such as lunch rooms and includes criteria for metals of interest in such non-industrial areas. The risk assessment process is still available from NMCPHC upon request.	14 Nov 2012
Appendix A, Table Z-1A	All	Removed typographical error in CAS number	12 Dec 2012

Chapter	Paragraph	Description	File Date*
Chapter 9 Draft	All	Removed Chapter 9 Draft	17 Dec 2012
Entire IHFOM including Appendices, Sampling Forms, Sampling Forms Definitions and webpage links	All	Checked and updated hyperlinks	19 Dec 2012 to 13 Feb 2013
Chapter 13	Section: 13.1 Appendix G	Revised and updated the Indoor Environmental Quality Chapter 13 Section 1 Appendix G National Ambient Air Quality and World Health Organization standards, checked links, and updated references resources.	12 Feb 2013
Chapter 13	Sections: 13.3	Revised and updated the Indoor Environmental Quality Chapter 13 Section 3 with information from the new World Health Organization guidelines, NAVFAC interim guidance and United Facilities Guide Specification, and checked links, and updated references resources.	26 Feb 2013
Chapter 3	11b and 11f	Updated outdated statement regarding thoracic and inhalable OELs.	26 Feb 2013
Chapter 3	18	Removed the year from the ACGIH Latest Edition TLVs® and BEIs, Threshold Limit Values for Chemical Substances and Physical Agents reference.	26 Feb 2013
Chapter 3	1b, 3a, 3b and 5b	Minor cosmetic wording change.	26 Feb 2013
Chapter 4	4d(4)(e)(i)	Minor cosmetic wording change.	26 Feb 2013
Chapter 3	12	Minor cosmetic wording change.	27 Feb 2013
Chapter 2, Appendix 2-A	3g and 4g	Updated industrial hygienist's role in recommending medical surveillance.	27 Feb 2013
Chapter 2, Appendix 2-B	All	Added a new Appendix 2-B on recommended formats for medical surveillance summaries.	27 Feb 2013
Chapter 2, Appendix 2-A	3c and 4h(5)	Minor cosmetic change.	12 Mar 2013

Chapter	Paragraph	Description	File Date*
Appendix A, Table Z-1A	Dieldrin	Fix typo for Dieldrin TWA value.	23 Apr 2013
Sampling Forms	NMCPHC 5100/13 NMCPHC 5100/14 NMCPHC 5100/15.1 NMCPHC 5100/15.2 NMCPHC 5100/17 NMCPHC 5100/18 NMCPHC 5100/19 NMCPHC 5100/20	Updated sampling forms.	28 Jun 2013
Sampling Forms Definitions	NMCPHC 5100/13 NMCPHC 5100/14 NMCPHC 5100/15.1 NMCPHC 5100/15.2 NMCPHC 5100/17 NMCPHC 5100/18 NMCPHC 5100/19 NMCPHC 5100/20	Updated sampling form definitions.	28 Jun 2013
Chapter 5	7, 8 and 11/12 (References)	Updated Chapter 5 to reflect current guidance (BUMED Note 6260) and upcoming policy changes for noise surveys. This update also included reformatting the chapter and updating any hyperlinks.	9 May 2014
Chapter 2	All	Updated Chapter 2 and reorganized and added appendices to reflect current guidance and upcoming policy changes for conducting industrial hygiene surveys. This update also included reformatting the chapter and updating any hyperlinks.	9 May and 21 May 2014
Chapter 9	All	Updated Chapter 9 to reflect current guidance for respiratory protection. This update also included reformatting the chapter and updating any hyperlinks.	22 May 2014
Chapter 9, Appendix 9-A	Appendix 9-A Footnote C of Assigned Protection Factors table	Updated footnote regarding assigned protection factor information for helmet/hooded Powered Air-Purifying Respirator (PAPR) and Supplied-Air Respirator (SAR).	07 Jul 2014
Chapter 13	Sections: 13 Introduction, 13.1, 13.1 Appendix G, 13.2, 13.2 Appendix B, 13.3, 13.4, 13.5 and 13.6	Revised and updated the Indoor Environmental Quality Chapter 13 Introduction, Section 1, Section 2, Section 3, Section 4, Section 5 and Section 6. Some of the updates included content, primarily in Sections 1, 2, 3, and Section 1 Appendix G. This update also included reformatting the chapter and updating any hyperlinks.	08 Jul 2014
Chapter 10	All	Updated Chapter 10 to reflect current guidance for personal protective equipment. This update also included reformatting the chapter and updating any hyperlinks.	17 Jul 2014

Chapter	Paragraph	Description	File Date*
Chapter 5 Appendix 5-B and Audiometric Booth Certification Form	All	Changed Appendix 5-B cosmetically to highlight certain information at the request of the audiologist.	11 Sep 2014
Chapter 2, Appendix 2-D	All	Updated tables to reflect DOEHRS-IH exposure assessment matrices.	11 Sep 2014
Chapter 3	All	Updated Chapter 3 to reflect current guidance for industrial hygiene sampling procedures. This update also included reformatting the chapter and updating any hyperlinks.	11 Sep 2014
Sampling Forms Definitions	NMCPHC 5100/13 NMCPHC 5100/14 NMCPHC 5100/15.1 NMCPHC 5100/15.2 NMCPHC 5100/16 NMCPHC 5100/18 NMCPHC 5100/19 NMCPHC 5100/20	Minor cosmetic change.	19 Sep 2014
Chapter 8	All	Updated Chapter 8 to reflect current guidance for industrial hygiene sampling equipment. This update also included updating any hyperlinks.	19 Sep 2014
Chapter 7	All	Updated Chapter 7 to reflect current guidance for asbestos monitoring procedures. This update also included reformatting the chapter and updating any hyperlinks.	26 Sep 2014
Chapter 2, Appendix 2-D	All	Updated tables to match Chapter 4 for DOEHRS-IH exposure assessment matrices.	13 Nov 2014
Chapter 3	All	Updated Chapter 3 Definitions to match with Chapter 4 and reformatted entire chapter to current layout.	13 Nov 2014
Chapter 4	All	Updated Chapter 4 to reflect current guidance and reflect DOEHRS-IH exposure assessment matrices. This update also included reformatting the chapter and updating any hyperlinks.	22 Sep to 13 Nov 2014
Chapter 11	All	Updated Chapter 11 to reflect current guidance for ultraviolet radiation. This update also included reformatting the chapter and updating any hyperlinks.	9 Dec 2014

Chapter	Paragraph	Description	File Date*
Chapter 12	All	Updated Chapter 12 to reflect current guidance for the industrial hygienists' role in hazardous materials spills/waste operations. This update also included reformatting the chapter and updating any hyperlinks.	10 Dec 2014
Chapter 1	All	Updated Chapter 1. This update included reformatting the chapter and updating any hyperlinks.	29 Dec 2014
Table of Contents	Appendix A	Removed Appendix A - Final Rule Limits Promulgated By OSHA In 1989 With Changes Through 1992, Table Z-1-A, Table Z-2. This update also included reformatting the Table of Contents.	29 Dec 2014
Title Page	All	Removed Title Page, as it was outdated, given that continual maintenance updates (since the last full revision and publication in March 1999) have been made in electronic format and are available on the IHFOM web page: http://www.med.navy.mil/sites/nmcphc/industrial-hygiene/industrial-hygiene-field-operations-manual/Pages/default.aspx .	29 Dec 2014
Chapter 4	2d and 4d(6)(a)	Updated Chapter 4 to clarify information on handling censored (less than limit of detection (LOD) or limit of quantification (LOQ)) data.	20 Jan 2015
Chapter 6	All	Updated Chapter 6 to reflect current guidance for industrial ventilation. This update included reformatting the chapter and updating any hyperlinks.	9 Feb 2015
Chapter 9	4c(2)	Updated Chapter 9 to remove the reference to OSHA 1989 With Changes Through 1992, Table Z-1-A, Table Z-2 previously included in this manual.	6 Apr 2015
Chapter 10, Appendix 10-A, and Appendix 10-C	2a(3), Appendix 10-A 3d, and Appendix 10-C	Updated Chapter 10 to remove the reference to OSHA 1989 With Changes Through 1992, Table Z-1-A, Table Z-2 previously included in this manual.	6 Apr 2015
Chapter 13	Sections: 13.1, 13.1 Appendix G, 13.2, 13.3, 13.2 Appendix A and 13.6	Revised and updated the Indoor Environmental Quality Chapter 13 Section 1, Section 2, Section 3, and Section 6. Some of the updates included content, primarily in Section 1 Appendix G. This update also included updating references and updating any hyperlinks.	2 Jun 2015
Chapter 14	3	Corrected and/or updated hyperlinks.	2 Jun 2015
Chapter 3	All	Updated Chapter 3 Definition for OEL based on BUMED input.	10 Jun 2015
Chapter 4	All	Updated Chapter 4 Definition for OEL based on BUMED input.	10 Jun 2015
Chapter 13	Section: 13.1 Appendix G	Clarified information from ASHRAE references for guidance on carbon dioxide and relative humidity.	7 Jul 2015

Chapter	Paragraph	Description	File Date*
Chapter 4	4d(4)(b) <u>2</u>	Updated Table 4.3 - Exposure Effect Ratings to remove action level (AL) nomenclature with regards to the 95th percentile exposure point estimate (as used in DOEHRS-IH), and have only the 50% OEL equivalent to the nomenclature used in the AIHA exposure assessment strategy reference.	7 Jul 2015
Chapter 3	1b	Corrected minor typographical error regarding acronyms.	7 Jul 2015
Chapter 2, Appendix 2-D	Table 2	Updated Table 2-Exposure Effects Rating Categorization to make consistent with Chapter 4, removing action level (AL) nomenclature with regards to the 95th percentile exposure point estimate (as used in DOEHRS-IH), and having only the 50% OEL equivalent to the nomenclature used in the AIHA exposure assessment strategy reference.	7 Jul 2015
Chapter 8.	4b	Updated information on equipment that is calibrated at the NMCPHC Calibration Laboratory.	2 Dec 2015
Chapter 8.	7	Adding clarification on field calibration of personal sampling pumps.	2 Dec 2015
Chapter 2	1 and 3e(2)	Added clarification on industrial hygiene role in environmental exposure assessments and determining personnel exposures to chemicals from an environmental source.	8 Dec 2015
Chapter 2	4a and 4c	Added clarification on what is included on an Exposure Monitoring Plan.	21 Dec 2015
Chapter 3	1e	Removed “as published in the IHFOM” since the IHFOM does not publish OELs.	1 Apr 2016
Chapter 4	2o	Removed “as published in the IHFOM” since the IHFOM does not publish OELs.	1 Apr 2016
Chapter 2	All	Reviewed, updated and streamlined information.	28 Jul 2016
Chapter 3	1e	Added OSHA substance specific section 6(b) of the OSH Act of 1970 rulemaking OELs	19 Oct 2016
Chapter 4	2o	Added OSHA substance specific section 6(b) of the OSH Act of 1970 rulemaking OELs	19 Oct 2016
Chapter 2	All	Reviewed, compared, and updated Chapter 2 to include necessary afloat survey format, template and notification of completion guidance from Chapter 14	14 Nov 2016
Chapter 14	All	Deleted. Necessary afloat survey format, template and notification of completion guidance now included in Chapter 2	14 Nov 2016
Table of Contents	Chapter 14	Removed Chapter 14.	14 Nov 2016

Chapter	Paragraph	Description	File Date*
Chapter 5	All	Updated Chapter 5 to reflect current guidance for noise. This update included reformatting the chapter and updating any hyperlinks.	17 Nov 2016
Chapter 2 Appendix 2- A	5e(1)(d) through (f),and 5f(8)	Updated Chapter 2 to reflect current guidance for annotating carcinogen in surveys.	21 Dec 2016

* This is the date the files were created or updated. However, this date may not reflect the actual effective date of posting to the Navy and Marine Corps Public Health Center (NMCPHC) website.