

**BY ORDER OF THE COMMANDER  
OKLAHOMA CITY AIR LOGISTICS  
COMPLEX**



**OKLAHOMA CITY AIR LOGISTICS  
COMPLEX INSTRUCTION 48-140**

**17 SEPTEMBER 2024**

***Aerospace Medicine***

**CHEMICAL EXPANDED STANDARDS**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements and extends the requirements of *Occupational Safety and Health Administration (OSHA) Standards*, 29 Code of Federal Regulations (CFR) 1910.141 (*Sanitation*) and 1910.1001-1053 (*OSHA Expanded Standards*), in addition to Department of Air Force Manual (DAFMAN) 91-203, *Air Force Occupational Safety, Fire, and Health Standards* and DAFMAN 48-146, *Occupational Health Program Management*. It establishes policy and prohibitions applicable to Oklahoma City Air Logistics Complex (OC-ALC) personnel. Housekeeping verification guidance is incorporated into this instruction. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and disposed of IAW Air Force Records Disposition Schedule located in the Air Force Records Information Management System (AFRIMS). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Department of the Air Force (DAF) Form 847, *Recommendation for Change of Publication*; route DAF Form 847s from the field through the appropriate functional chain of command. This publication may not be supplemented.

**SUMMARY OF CHANGES**

This document has been substantially revised and needs to be completely reviewed. Major changes include recently published changes to referenced instructions and manuals. This rewrite revises OC-ALCI 48-140 by (1) adding Methylene Chloride and Beryllium to the list of chemicals, (2)

adding the regulated area signage requirements to [Attachment 2](#), (3) adding Beryllium notification requirements for cleaning and laundering personnel and contractors, (4) adding the addition of Air Force Sustainment Center Instruction (AFSCI) 21-102, *Engineering Hierarchy of Controls*, and (5) updating references in the body and glossary. To comply with Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Procedures*, the word “Shall” has been replaced by the word “Must” for clarity.

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**1. Scope.** The following requirements apply throughout Oklahoma City Air Logistics Complex (OC-ALC):

1.1. Chemicals covered by OSHA's expanded standards are found in a variety of materials encountered in Air Force operations. Examples include, but are not limited to, anticorrosive agents in surface coatings, paint stripping chemicals, soldering, electroplating processes, welding processes, welding flux material or filler metal, and wood treated with preservative. This instruction is intended to provide guidance regarding control of occupational exposure to chemicals utilized in the OC-ALC covered by OSHA's expanded standards.

1.2. It is OC-ALC policy that potential exposure to chemicals addressed in 29 CFR 1910.1001 through 1910.1053 of federal regulations, commonly referred to as the "OSHA Expanded Standards," must be controlled to the maximum extent possible through the application of the hierarchy of controls addressed in paragraphs **2.1.1 through 2.1.4** of this instruction. **Note:** All hard copies of instructions are considered uncontrolled copies, only the electronic version that resides on the Air Force e-Publishing website will be considered controlled. In instances where a hard copy of an instruction is utilized, it is the user's responsibility to verify that the copy is the most current one available. This will be accomplished by comparing the date on the hard copy with the date of the electronic version.

## **2. Roles and Responsibilities.**

### **2.1. Group-Level Commanders/Directors must:**

2.1.1. Ensure the Defense Federal Acquisition Regulation Supplement Part 223 *Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace*, 1998 edition, 223.73-1 subpart 223.73, minimizing the use of materials containing hexavalent chromium is implemented IAW DAFI 63-101/20-101, *Integrated Life Cycle Management*.

2.1.2. Ensure implementation of Air Force Sustainment Center Instruction (AFSCI) 21-102, *Engineering Hierarchy of Controls*, is implemented. Feasibility studies must be conducted IAW the instruction.

2.1.3. Ensure that product substitution and/or process modification that eliminates the generation of aerosol contamination are pursued as the primary means of controlling employee exposure. Aerosols include liquids and solids.

2.1.4. Ensure that when product substitution or process modification are not possible that the following hierarchy of control methods are implemented in the workplace: 1) 100% usage of applicable Engineering Controls for all processes (e.g., initial design; process isolation; employee isolation; industrial ventilation systems with High Efficiency Particulate Air (HEPA) filtration on equipment such as downdraft tables and booths; shrouds for dust producing equipment such as sanders, grinders, or buffers, attached to a sealed HEPA filtered vacuum (reference this instruction **paragraph 2.1.4.3** regarding "sealed"); 2) Work Practice Controls (e.g., perform task in a manner which maximizes the efficiency of ventilation equipment, such as positioning one's body upstream from the point of operation; material handling such as transporting material in closed containers and

keeping containers closed when not in use; establishing a regulated area as defined by the Bioenvironmental Engineering (BE) shop specific Routine Industrial Hygiene (IH) Assessment Letter; inspecting and maintaining process and control equipment on a regular basis; implementing effective housekeeping procedures); 3) Administrative Controls (e.g., personal hygiene; moving an employee to a place of lower exposure or reducing individual employee work hours on tasks if either is allowed by applicable OSHA standard) and; 4) Personal Protective Equipment (PPE) (e.g., respiratory protection, Tyvek© coveralls, gloves).

- 2.1.4.1. The shop specific Routine Industrial Hygiene (IH) Assessment Letter issued by 72nd Operational Medical Readiness Squadron, Bioenvironmental Engineering (BE) Flight (72 OMRS/SGXB) provides guidance and direction regarding controls and PPE.
- 2.1.4.2. HEPA filters must meet the established criteria of at least 99.97% filtration efficiency for particle sizes equal to or greater than  $0.3\mu$  (i.e., microns). The equivalent minimum efficiency reporting value (MERV) is 17. Filtration media rated at less efficiency (i.e., less than 99.97%), particle capture size greater than  $0.3\mu$  or a MERV of less than 17, are not HEPA filters.
- 2.1.4.3. All HEPA vacuums must be sealed units so that air is passed through the HEPA filter prior to being exhausted.
- 2.1.5. Ensure implementation of the guidance document Occupational Hygiene: Contamination Control and Housekeeping issued by the United States Air Force School of Aerospace Medicine (USAFSAM) in the development of housekeeping plans. Contact BE for guidance regarding implementation, or for a copy of the document.
- 2.1.6. Ensure washing facilities for personnel are readily available and equipped with soap and potable water capable of removing contaminants IAW OSHA Enforcement and Compliance Directive (CPL) 02-02-074, *Inspection Procedures for the Chromium VI Standards*. This includes shower facilities when required by OSHA standard (e.g., cadmium), DoD or AF regulations. Contact BE (734-7844, building 3334) for guidance.
- 2.1.7. Ensure that change rooms are provided in work areas when required by an OSHA expanded standard (e.g., cadmium), DoD or AF regulations. Contact BE for guidance.
- 2.1.8. Ensure that production shops develop and implement housekeeping plans IAW BE recommendations and [paragraph 2.1.5](#) of this instruction. The plans must be approved by BE and applicable Union representative prior to implementation. Applicable areas for housekeeping plans include, regulated and non-regulated work areas, adjacent work areas, break rooms, locker rooms and any other area designated by BE. Reference section 3 of this instruction for requirements associated with housekeeping plans.
- 2.1.9. Ensure that BE and Unit Environmental Coordinators (UECs) are notified prior to, and involved in, new process planning to include new or replacement equipment, change to processes, introduction of new material and material substitution.

2.1.10. Ensure that BE is consulted prior to the acquisition or modification of engineering controls (e.g., ventilated booths/tables, HEPA vacuums, spray guns, etc.) and is involved in the acceptance testing of new equipment (e.g., ventilation air flow, noise level, air sampling).

**2.2. Squadron/Unit Level Commanders and Chiefs must:**

2.2.1. Ensure that supervisors and employees know what processes are associated with potential exposure to the applicable chemicals covered by OSHA's expanded standards (i.e., 29 CFR 1910.1001 through 1910.1053). Reference the shop specific Routine Industrial Hygiene (IH) Assessment Letter. Contact BE for guidance.

2.2.2. Provide the resources necessary to maintain effective contaminant control and housekeeping based on requirements of the OSHA expanded standards, the guidance issued by USAFSAM, this instruction, and BE.

2.2.3. Ensure that when compressed air is used to remove dust from parts processed in glove box blast cabinets, the parts are placed inside the box enclosure, all doors are closed, and the ventilation system is activated.

2.2.3.1. Ensure that blast cabinet operators monitor the level of suspended dust through the cabinet's viewing ports after using compressed air, and that cabinet doors are not opened until suspended dust is no longer visible.

2.2.4. Ensure that information and training on applicable OSHA expanded standards is provided to personnel IAW direction provided in the most recent shop specific Routine Industrial Hygiene (IH) Assessment Letter or Amendment Letter, the shop specific training slides provided by BE, and this instruction. The training must be conducted at the time of an employee's initial assignment and annually (i.e., every 12-months based on the date of the last training event) thereafter.

2.2.5. Implement doffing areas IAW technical guidance and direction from BE for the doffing and handling of contaminated coveralls and other PPE, the cleaning of equipment, and to prevent contamination of personal clothing and adjacent areas. Contact the UEC's regarding disposition of containers of contaminated coveralls and other hazardous waste.

2.2.6. Ensure that supervisors immediately notify the 72nd Occupational Medicine Flight (OMF) when any new personnel, including loaned personnel, are assigned to the shop's Similar Exposure Group (SEG)/Zone associated with an OSHA expanded standard hazard listed in the shop's Routine Industrial Hygiene (IH) Assessment Letter. Any required medical exam associated with the SEG/Zone is to be accomplished within 30-days of assignment. This includes any personnel that will be performing processes normally associated with that SEG/Zone. This is to ensure that personnel receive medical surveillance required by the OSHA standards and Air Force regulations.

2.2.7. Ensure that sealed HEPA vacuums, and any other dust collecting devices (e.g., bins, drawers, hoppers, etc.), are maintained and emptied per the manufacturer's guidance. Tasks are to be accomplished only by personnel qualified through training and education (i.e., Expanded Standard training discussed in [paragraph 2.2.4](#) of this instruction, and Hazardous Waste Management Practices which can be scheduled through the shop's training monitor) to perform such actions associated with potential exposure to chemicals covered by an OSHA expanded standard. Reference the shop specific Routine Industrial Hygiene (IH) Assessment Letter for chemicals identified by BE which are covered by an OSHA expanded standard.

2.2.8. Ensure recommendations and findings noted in BE survey letters (e.g., Routine Industrial Hygiene (IH) Assessment, Air Sampling Results, Housekeeping Verification, Notice of Hazard, Special IH Assessment, etc.) are promptly addressed.

2.2.9. Ensure that when engineering controls have been determined to be unfeasible for processes where engineering controls are required, that all factors used in this determination is documented and sent to BE IAW AFSCI 21-102, *Engineering Hierarchy of Controls* and DAFMAN 48-146, *Occupational Health Program Management*.

2.2.10. Ensure that each employee who performs a task utilizing a chemical listed in the OSHA expanded standards, which requires the use of PPE specified in the shop specific IH Assessment Letter, has two separate lockers assigned for their use IAW 29 CFR 1910.141, OSHA standard on sanitation. One locker must be used only for the storage of personal items, and the second locker must be used only for the storage of PPE. Contact BE for technical guidance.

2.2.11. Ensure that change rooms are provided in work areas when required by an OSHA standard (e.g., cadmium), DoD or AF regulations. Contact BE for guidance.

### 2.3. Supervisors must:

2.3.1. Ensure that initial (i.e., prior to performing a task/process where an OSHA expanded standard chemical is present) and annual training (i.e., every 12-months based on the date of the last training event) required by OSHA's expanded standards is presented IAW direction in [paragraph 2.2.4](#) of this instruction and is recorded in the Training Scheduling System (TSS) with each chemical listed separately. Course numbers have already been established in TSS to accommodate recording this training. Contact BE for guidance.

2.3.2. Ensure that engineering controls (e.g., ventilation booths, downdraft tables, shrouded tools with sealed HEPA vacuums) are maintained properly. Suspected deficiencies in air flow performance must be reported to BE and a request made to evaluate the system.

2.3.3. Ensure that all control measures and PPE recommended in correspondence from BE (e.g., the most recent shop Routine Industrial Hygiene (IH) Assessment Letter or Amendment Letter, Air Sampling Letters, Special Assessment Letter) are implemented.

2.3.4. Ensure regulated areas are established IAW BE recommendations, and doffing areas are implemented IAW [paragraph 2.2.5](#) of this instruction.

2.3.5. Ensure that employees do not chew tobacco or gum, eat, drink, smoke or apply cosmetics in regulated areas, or carry these products into regulated areas.

2.3.6. Ensure that BE is notified of any process change involving an OSHA expanded standard chemical. Examples include, but are not limited to, introducing an OSHA expanded standard chemical into a process, or removing it from a process; increasing or decreasing the quantity used; increasing or decreasing the frequency of use; changing the method of application or removal.

2.3.7. Ensure that employees required by OMF to complete an occupational medical exam (OME) annually, accomplish the exam every 12-months. The 12-month exam appointment must be based on the date of the last exam.

2.3.7.1. Supervisors must follow the guidance in [paragraph 2.2.6](#) of this instruction regarding OMEs.

2.3.8. Develop and implement a shop specific housekeeping plan IAW [paragraph 2.1.8](#) of this instruction.

2.3.9. Ensure that employees are notified of air sampling results IAW the guidance provided in shop specific Air Sampling Survey Letters.

2.3.10. Ensure hard copies of Air Sampling Survey Letters are posted IAW the guidance provided in the Air Sampling Survey Letters.

2.3.11. Ensure that a hard copy of each Air Sampling Survey Letter is maintained in the shop and readily accessible to shop employees for at least two years from the date on the Air Sampling Survey Letter. Shops in the Respiratory Protection Program (RPP) must maintain these Air Sampling Survey Letters in the shop's RPP notebook, behind Tab F3 IAW OC-ALCI 48-103, *Respiratory Protection Program*.

2.3.12. Conduct initial and annual training in shops where housekeeping plans are required. The training must cover the contents of the shop's housekeeping plan (e.g., methods of cleaning and surfaces that must be cleaned), PPE requirements, PPE donning and doffing procedures, and equipment cleaning procedures. Contact BE for guidance. The training must be documented under "Expanded Standards Housekeeping Plan" in the TSS.

2.3.13. Contact BE if any of the following chemicals from OSHA's expanded standards are in the shop: asbestos, vinyl chloride, inorganic arsenic, lead, cadmium, benzene, hexavalent chromium, 1,2-dibromo-3-chloropropane, acrylonitrile, ethylene oxide, formaldehyde, methylenedianiline, 1,3-butadiene, crystalline silica, methylene chloride, and beryllium. Use of these chemicals may require the development and implementation of a written compliance program or written plan for emergency situations. BE will determine if a written program or plan is required. If BE determines a written program is required, the Routine Industrial Hygiene (IH) Assessment Letters thereafter will provide a statement confirming compliance or non-compliance with the applicable OSHA standards and Air Force regulations.



2.3.14. Ensure the procedure listed in OC-ALCI 91-201, *Mishap/Incident Reporting Procedures*, is used to report the accidental release of chemicals listed in the OSHA expanded standards. This includes the observed or suspected release of dust from engineering controls (e.g., ventilation systems).

### 3. Housekeeping.

#### 3.1. Shop supervisors and employees must:

3.1.1. Ensure that items leaving a regulated area (i.e., equipment, carts, tools, parts, PPE, etc.) are cleaned IAW the applicable housekeeping plan, equipment cleaning procedures, PPE doffing procedures, and applicable tech data (e.g., Technical Orders – TOs).

3.1.2. Ensure that all housekeeping tasks are performed IAW the shop's housekeeping plan developed in coordination with, and approved by, BE. Housekeeping plans can be changed (e.g., frequency of cleaning, areas to be cleaned) by BE based on findings during periodic follow-up shop Assessments.

3.1.3. Ensure that in areas with a housekeeping plan approved by BE, that compressed air, dry sweeping and dry shoveling are not used as cleaning methods unless approved in writing by BE.

3.1.4. Ensure that proper attachments for HEPA vacuums must be available, IAW [paragraph 2.2.2](#) of this instruction, for performing cleaning specified in the shop's housekeeping plan.

3.1.5. Ensure that disposal of contaminated materials (e.g., PPE, cleaning water, shop equipment, rags, etc.) is coordinated through the Unit Environmental Coordinator (UEC).

3.1.6. Ensure that OC-ALC Form 170, *Housekeeping Verification Checklist* (**Attachment 3**) is used by OC-ALC personnel per guidance provided on the form and this instruction, and that it is filled out correctly at the completion of each housekeeping task. The checklist applies to a calendar month (e.g., May, June, July, etc.).

3.1.6.1. Ensure that personnel performing cleaning operations verify that their task has been completed IAW the shop's housekeeping plan by placing their initials in legible block letters in the box that designates the correct area, day, and shift.

3.1.6.2. Shop supervisors, or their designee (e.g., Work Lead, WL), must verify that housekeeping tasks have been completed IAW the shop's housekeeping plan. Verification is indicated by placing one's initials in legible block letters in the box in the verification column that designates the correct day and shift. Verification of cleaning tasks cannot be performed by the individual who performed the cleaning task.

3.1.6.3. Shop supervisors must ensure that each break room and each locker room have their own checklists, and a copy of the corresponding housekeeping plan, posted in each room. This requirement is IAW United States Air Force School of Aerospace Medicine, Preliminary Guidance Occupational Hygiene: Contamination Control and Housekeeping, referenced in [paragraph 2.1.5](#) of this instruction.



3.1.6.4. Checklists which are not posted (i.e., rooms other than break and locker rooms) must be maintained on file by the supervisor, along with a copy of the applicable housekeeping plan. The checklists must be made available to employees to initial when cleaning tasks are completed.

3.1.6.5. Supervisors must maintain copies of the checklists for 12-months from the date of completion (e.g., a checklist completed in November must be maintained through November of the following year) and produce the checklists for inspection when requested.

### 3.2. Housekeeping Performed by Contract Personnel:

3.2.1. Contract personnel will ensure that OC-ALC Form 171, *Contractor Housekeeping Verification Checklist*, (**Attachment 4**) is used per guidance provided on the form and this instruction, and that it is filled out correctly at the completion of each housekeeping task. The checklist applies to a calendar month (e.g., May, June, July, etc.).

3.2.2. Contract personnel performing cleaning operations must verify completion of their task by placing their initials in legible block letters in the box that designates the correct area, day, and shift.

3.2.3. Production organizations are responsible for ensuring that areas are cleaned IAW with their applicable housekeeping plan. If an area listed on a shop's housekeeping plan is not cleaned by contract personnel, it is the responsibility of the shop's management to ensure the area is cleaned IAW the housekeeping plan. Checklists and housekeeping plans for break rooms and locker rooms must be maintained IAW [paragraph 3.1.6.3](#) of this instruction. Checklists which are not posted must be maintained IAW [paragraph 3.1.6.4](#) of this instruction.

3.2.4. Supervisors, or designee, (e.g., WL) must review the OC-ALC Form 171 and the corresponding housekeeping plan after As Clean As Practicable (ACAP) cleaning has been accomplished. If the contractor has completed the cleaning tasks IAW the Performance Work Statement (PWS), the supervisor or designee must indicate such by placing their initials in legible block letters in the box in the verification column that designates the correct day and shift. If a deficiency is noted, the government designee must not initial the Form 171, but should immediately notify the contracting officer's representative (COR) at 734-8531 to report the discrepancy. The following workflow account has also been established by the OC-ALC contracting office to report deficiencies, [ocalc.obcb.dmag@us.af.mil](mailto:ocalc.obcb.dmag@us.af.mil). The COR will assist in the customer complaint process and notification of the contracting officer. Supervisors may also choose to attach a copy of the Customer Complaint Record form to their OC-ALC Form 171 when filed at the end of the month. Contact the COR for guidance, or a copy of the Customer Complaint Record form.

3.2.5. Supervisors must maintain copies of checklists for a duration IAW [paragraph 3.1.6.5](#) of this instruction.

#### 4. Work Practices.

- 4.1. Pedestal fans or air moving devices other than engineering controls will not be used at any time in regulated areas, as defined by the BE shop specific Routine Industrial Hygiene (IH) Assessment Letter.
- 4.2. Pedestal fans or air moving devices other than engineering controls will not be used in areas adjacent to a regulated area in such a manner as to generate a cross draft in the regulated area.
- 4.3. Removal of contaminants from work area surfaces or PPE by blowing, shaking or other means which disperses the contaminants in the air is prohibited. Decontamination equipment such as an enclosed air shower booth is an engineering control and thus exempt from this prohibition.
- 4.4. HEPA vacuum assisted shrouds for dust producing equipment (e.g., sanders, grinders, buffers, saws, etc.) are effective in reducing airborne particulates. They must be used to the fullest extent possible as an engineering control IAW 2.1.4. and 2.3.2. of this instruction. Reference paragraphs [2.1.4.2](#) and [2.1.4.3](#) of this instruction for requirements regarding HEPA filters and HEPA vacuums.

#### 5. Hygiene.

- 5.1. Personnel who have skin contact with contaminants must wash their hands and face at the end of the work shift or prior to eating, drinking, smoking, chewing tobacco or gum, applying cosmetics, or using the toilet facilities.
- 5.2. Personnel must not eat, drink, smoke, chew tobacco or gum, store food or beverages or apply cosmetics in regulated areas, or in areas where skin or eye contact with contaminants listed in OSHA expanded standards occurs.
- 5.3. Personnel must follow the requirements of OC-ALCI 48-110, *Workplace Food and Drink*.
- 5.4. Personnel who perform a task utilizing a chemical listed in the OSHA expanded standards, and who are required to use PPE related to the task as specified in the shop specific Routine Industrial Hygiene (IH) Assessment Letter, must not store PPE or equipment with personal items. Lockers must be assigned to personnel and utilized IAW [paragraph 2.2.10](#) of this instruction. Contact BE for technical guidance.
- 5.5. Personnel who are in the cadmium program, identified by their Similar Exposure Group (SEG) in the shop specific Routine Industrial Hygiene (IH) Assessment Letter, and who are required to use PPE related to the task as specified in the Routine Industrial Hygiene (IH) Assessment Letter, must shower during the end of their work shift, IAW 29 CFR 1910.1027(j)(3), OSHA's expanded standard on cadmium. Contact BE for technical guidance.

#### 6. PPE.

- 6.1. Personnel in regulated areas are required to wear the PPE specified in the most recent Routine Industrial Hygiene (IH) Assessment Letter provided by BE.

6.2. Clothing that is laundered, cleaned, maintained, or disposed of must be placed in a closed, impermeable container (e.g., sealed plastic bag). The appropriate warning label as directed in OSHA's expanded standards must be placed on the laundry container, and on the outside of HEPA vacuum housings. Contact BE regarding proper labeling.

6.3. Any person, or contract service, who launders or cleans protective clothing or equipment contaminated with any of the following chemicals from the expanded standards must be notified of the potentially harmful effects of exposure: asbestos, inorganic arsenic, lead, chromium VI, cadmium, 1,2-dibromo-3-chloropropane, acrylonitrile, formaldehyde, methylenedianiline, and beryllium. Contractors must be notified through official contracting documents.

6.4. PPE worn in a regulated area must not be worn outside the regulated area. PPE must be removed in the doffing area IAW the shop's doffing procedures.

## 7. Regulated Areas.

7.1. Regulated areas must be established, demarcated (e.g., cones, stanchions, barrier tape) and posted with signage complying with the appropriate OSHA expanded standard, and DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, requirements for DANGER signage, to prevent the entrance of unauthorized personnel. Reference [Attachment 2](#) of this instruction for required wording of signage.

7.1.1. Lettering height on signage must be equal to or greater than the height specified in DAFMAN 91-203, Chapter 17 for a legibility distance of 40 feet.

7.1.2. The height and width of signage must be sufficient to accommodate the wording as specified in [Attachment 2](#) of this instruction, with the minimum lettering height directed in [paragraph 7.1.1](#).

7.1.3. The design and layout of signage must comply with criteria for Danger Signs specified in DAFMAN 91-203, Chapter 17.

7.2. Personnel not authorized to perform a task in a regulated area, or not wearing the PPE specified in the shop's most recent Routine Industrial Hygiene (IH) Assessment Letter, must not enter a regulated area.

7.3. The regulated areas of an affected shop are identified in the shop specific Routine Industrial Hygiene (IH) Assessment Letter.

BRIAN R. MOORE  
Brigadier General, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

29 CFR 1910.141, *Sanitation*

29 CFR 1910.1001 through 1910.1053, *OSHA Expanded Standards*

OSHA CPL 02-02-074, *Inspection Procedures for the Chromium VI Standards*

DAFI 63-101/20-101, *Integrated Life Cycle Management*, 16 February 2024

DAFMAN 91-203, *Air Force Air Force Occupational Safety, Fire, and Health Standards*, 25 March 2022

DAFMAN 48-146, *Occupational Health Program Management*, 1 December 2022

AFI 33-322, *Records Management and Information Governance Program*, 23 March 23

AFSCI 21-102, *Engineering Hierarchy of Controls*, 13 October 2022

USAFSAM, *Preliminary Guidance, Occupational Hygiene: Contamination Control and Housekeeping*, 15 July 2011

OC-ALCI 33-129, *Graphics*, 5 November 2018

TINKERAFBI 48-103, *Respiratory Protection Program*, 11 December 2019

OC-ALCI 48-110, *Workplace Food and Drink*, 11 April 2024

OC-ALCI 91-201, *Mishap/Incident Reporting Procedures*, 11 September 2024

***Prescribed Forms***

OC-ALC Form 170, *Housekeeping Verification Checklist*

OC-ALC Form 171, *Contractor Housekeeping Verification Checklist*

***Adopted Forms***

DAF Form 847, *Recommendation for Change of Publication*

OC-ALC Form 140, *Comments Continuation Sheet*

***Abbreviations and Acronyms***

**ACAP**—As Clean As Practicable

**AF**—Air Force

**DAFI**—Department of Air Force Instruction

**DAFMAN**—Department of Air Force Manual

**AFRIMS**—Air Force Records Information Management System

**AFSCI**—Air Force Sustainment Center Instruction

**BE**—Bioenvironmental Engineering

**CFR**—Code of Federal Regulation  
**CPL**—Enforcement and Compliance Directive  
**COR**—Contracting Officer’s Representative  
**DoD**—Department of Defense  
**HEPA**—High Efficiency Particulate Air  
**IAW**—In Accordance With  
**IH**—Industrial Hygiene  
**JST**—Job Safety Training  
**MERV**—Minimum Efficiency Reporting Value  
**MICT**—Management Internal Control Toolset  
**OC-ALC**—Oklahoma City Air Logistics Complex  
**OC-ALCI**—Oklahoma City Air Logistics Complex Instruction  
**OME**—Occupational Medical Exam  
**OMF**—Occupational Medicine Flight  
**OPR**—Office of Primary Responsibility  
**OSHA**—Occupational Safety and Health Administration  
**PPE**—Personal Protective Equipment  
**PWS**—Performance Work Statement  
**RDS**—Records Disposition Schedule  
**RPP**—Respiratory Protection Program  
**SEG**—Similar Exposure Group  
**SME**—Subject Matter Expert  
**TAFB**—Tinker Air Force Base  
**TO**—Technical Order  
**TSS**—Training Scheduling System  
**UEC**—Unit Environmental Coordinator  
**USAF**—United States Air Force  
**USAFSAM**—United States Air Force School of Aerospace Medicine  
**WL**—Work Lead

*Office Symbols*

**72 OMRS/SGXB**—Operational Medical Readiness Squadron, Bioenvironmental Engineering Flight

**72 OMRS/SGXO**—Operational Medical Readiness Squadron, Occupational Medicine Flight

**OC-ALC/SE**—Oklahoma City Air Logistics Complex Safety Office

## Attachment 2

## REQUIRED WORDING OF SIGNAGE REGULATED AREAS

Table A2.1. Required Wording of Signage for Regulated Areas.

Expanded Standard Chemical	Required Wording on Signage for Regulated Areas	Additional Wording/Demarcation Requirements
ASBESTOS 1910.1001(j)(4)	DANGER ASBESTOS MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS AUTHORIZED PERSONNEL ONLY	Where the use of respirators and protective clothing is required in the regulated area under this section, the warning signs shall include the following:  WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA
13 CARCINOGENS 1910.1003(e)(2)	DANGER (CHEMICAL IDENTIFICATION) MAY CAUSE CANCER AUTHORIZED PERSONNEL ONLY	<b><u>[If regulated area contains operations covered by 1910.1003(c)(5)]</u></b> DANGER (CHEMICAL IDENTIFICATION) MAY CAUSE CANCER WEAR AIR-SUPPLIED HOODS, IMPERVIOUS SUITS, AND PROTECTIVE EQUIPMENT IN THIS AREA AUTHORIZED PERSONNEL ONLY
INORGANIC ARSENIC 1910.1018(p)(2)	DANGER INORGANIC ARSENIC MAY CAUSE CANCER DO NOT EAT, DRINK OR SMOKE WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY	
BERYLLIUM 1910.1024(m)(2)	DANGER REGULATED AREA BERYLLIUM MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS AUTHORIZED PERSONNEL ONLY WEAR RESPIRATOR AND PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT IN THIS AREA	<b>1910.1024(m)(3)</b> Warning labels. Consistent with the HCS (§1910.1200), the employer must label each immediate container of clothing, equipment, and materials contaminated with beryllium, and must, at a minimum, include the following on the label:  DANGER CONTAINS BERYLLIUM MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS AVOID CREATING DUST DO NOT GET ON SKIN
LEAD 1910.1025(m)(2)	DANGER LEAD MAY DAMAGE FERTILITY OR THE UNBORN CHILD CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM DO NOT EAT, DRINK OR SMOKE IN THIS AREA	
CHROMIUM VI 1910.1026(e)(2)	DANGER CHROMIUM (VI) CANCER HAZARD CAN DAMAGE SKIN, EYES, NASAL PASSAGES, AND LUNGS WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY	<b>1910.1026(e)(2)</b> Demarcation. The employer shall ensure that regulated areas are demarcated from the rest of the workplace in a manner that adequately establishes and alerts employees of the boundaries of the regulated area.
CADMIUM 1910.1027(m)(2)	DANGER CADMIUM MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS AND KIDNEYS WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY	



BENZENE 1910.1028(j)(2)	DANGER BENZENE MAY CAUSE CANCER HIGHLY FLAMMABLE LIQUID AND VAPOR DO NOT SMOKE WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY	
Expanded Standard Chemical	Required Wording on Signage for Regulated Areas	Additional Wording/Demarcation Requirements
1, 2-DIBROMO-3-CHLOROPROPANE 1910.1044(o)(2)	DANGER 1,2-DIBROMO-3-CHLOROPROPANE MAY CAUSE CANCER WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY	
ACRYLONITRILE 1910.1045(p)(2)	DANGER ACRYLONITRILE (AN) MAY CAUSE CANCER RESPIRATORY PROTECTION MAY BE REQUIRED IN THIS AREA AUTHORIZED PERSONNEL ONLY	
ETHYLENE OXIDE 1910.1047(j)(2)(i)	DANGER ETHYLENE OXIDE MAY CAUSE CANCER MAY DAMAGE FERTILITY OR THE UNBORN CHILD RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING MAY BE REQUIRED IN THIS AREA AUTHORIZED PERSONNEL ONLY	
FORMALDEHYDE 1910.1048(e)(1)	DANGER FORMALDEHYDE MAY CAUSE CANCER CAUSES SKIN, EYE, AND RESPIRATORY IRRITATION AUTHORIZED PERSONNEL ONLY	
METHYLENEDIANILINE 1910.1050(k)(2)(i)	DANGER MDA MAY CAUSE CANCER CAUSES DAMAGE TO THE LIVER RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING MAY BE REQUIRED IN THIS AREA AUTHORIZED PERSONNEL ONLY	
1,3-BUTADIENE 1910.1051(e)(3)		<b>1910.1051(e)(3)</b> Regulated areas shall be demarcated from the rest of the workplace in any manner that minimizes the number of employees exposed to BD within the regulated area.
METHYLENE CHLORIDE 1910.1052(e)(6)	DANGER METHYLENE CHLORIDE MAY CAUSE CANCER RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING REQUIRED AUTHORIZED PERSONNEL ONLY	<b>1910.1052(e)(6)</b> The employer shall demarcate regulated areas from the rest of the workplace in any manner that adequately establishes and alerts employees to the boundaries of the area and minimizes the number of authorized employees exposed to MC within the regulated area.
CRYSTALLINE SILICA 1910.1053(j)(2)	DANGER RESPIRABLE CRYSTALLINE SILICA MAY CAUSE CANCER CAUSES DAMAGE TO LUNGS WEAR RESPIRATORY PROTECTION IN THIS AREA AUTHORIZED PERSONNEL ONLY	

## Attachment 3

## OC-ALC FORM 170, HOUSEKEEPING VERIFICATION CHECKLIST EXAMPLE

Figure A3.1. OC-ALC Form 170, Example of Housekeeping Verification Checklist.

**Housekeeping Verification Checklist**

⊕ Name of Shop: Paint Services Section WIC/CF#: 0741 Org. Symbol: 551 CMMXS/MXDPBB  
 Building #: 9001 Post #: G44

MONTH: July 2017	Regulated Area			NA			NA			NA			NA			NA			Supervisor Verification for Shift		
DAY	D	S	G	D	S	G	D	S	G	D	S	G	D	S	G	D	S	G	D	S	G
1	NA	NA	NA																NA	NA	TR
2	NA	NA	NA																NA	NA	TR
3	NA	NA	NA																NA	NA	TR
4	NA	NA	NA																NA	NA	TR
5	NA	NA	NA																NA	NA	TR
6	NA	NA	NA																NA	NA	TR
7	NA	NA	NA																NA	NA	TR
8	NA	NA	NA																NA	NA	TR
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Only one area (the Regulated Area) applicable for checklist. All other columns are NA.

Not Applicable: No work in area during the shift

1) This verification checklist shall be used in conjunction with the shop's housekeeping plan, developed by the shop supervisor and BEF, which provides specific information regarding what is to be cleaned, what techniques are to be used (e.g., HEPA, wet wipe, etc.) and the frequency for cleaning. THE CHECKLIST APPLIES TO A CALENDAR MONTH (e.g., May, June, July, etc.).

2) Each person who performs cleaning tasks shall place their initials in block letters in the box which identifies the day, area and shift the task was performed.

3) Supervisors or their designee (e.g., WL), shall inspect and verify, at the end of their shift, that all housekeeping tasks have been completed IAW the shop's housekeeping plan. Verification is indicated by placing one's initials in legible block letters in the verification column box which designates the correct day and shift.

4) Each break room and locker room shall have their checklist posted in the room, along with a copy of the corresponding housekeeping plan. Supervisors shall maintain all checklists IAW OC-ALC 48-140, chapter 3, Housekeeping.

5) NA or the words "not applicable" shall be used to indicate blocks or columns which do not apply (e.g., there is no graveyard shift, the frequency is weekly instead of daily).

6) Supervisors shall fill in blank column headings with applicable name for shop areas to be cleaned by shop personnel (e.g., Regulated Area, Doffing or Transition Area, Downdraft Table, Blasting Cabinets, Tool Crib, etc.).

7) WIC/CF#: Shop I.D. number assigned by Bioenvironmental Engineering. It is shown in the SUBJECT line on the first page of Industrial Hygiene Survey Letters (e.g., 391A, 015I, 201F, 600C, etc.).

## Attachment 4

# OC-ALC FORM 171, CONTRACTOR HOUSEKEEPING VERIFICATION CHECKLIST EXAMPLE

Figure A4.1. OC-ALC Form 171, Example of Contractor Housekeeping Verification Checklist.

**Contractor Housekeeping Verification Checklist**

Name of Shop: Paint Services WIC/CF#: 0741 Org. Symbol: 551 CMMXS/MXDPBB

Building #: 4001 Post #: H-40 to Q-44

MONTH:	General Shop Area & Floor			Administrative Area			Tool Crib			<u>NA</u>			<u>NA</u>			<u>NA</u>			Supervisor Review for Shift			
	DAY	D	S	G	D	S	G	D	S	G	D	S	G	D	S	G	D	S	G	D	S	G
April 2013	1	JM	AJ	NA	JM	BL	NA	ML	AJ	NA							LM	SC	NA			
	2	JM	AJ	NA	JM	BL	NA	ML	AJ	NA							LM	SC	NA			
	3	ML	BL	NA	ML	BL	NA	JM	BL	NA							LM	SC	NA			
	4	AJ	JM	NA	AJ	JM	NA	ML	JM	NA							LM	SC	NA			
	5	AJ	JM	NA	AJ	JM	NA	ML	JM	NA							LM	SC	NA			
	6	CS	NB	NA	CS	NB	NA	CS	NB	NA							RN	MK	NA			
	7	CS	NB	NA	CS	NB	NA	CS	NB	NA							RN	MK	NA			
	8																					
	9																					
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1) This verification checklist shall be used IAW OC-ALC 148-140, and in conjunction with the shop's housekeeping plan which provides specific information regarding what is to be cleaned, what techniques are to be used (e.g., HEPA, wet wipe, etc.) and the frequency for cleaning. **THIS CHECKLIST APPLIES TO A CALENDAR MONTH** (e.g., May, June, July, etc.).

2) Each person who performs cleaning tasks shall place their initials in the box which identifies the day, area and shift the task was performed.

3) Supervisors or designee (e.g., WL), shall review this Contractor Housekeeping Verification Checklist and the corresponding housekeeping plan at the end of their shift. Shop supervisors shall report performance discrepancies by contacting the Contracting Officer Representative (COR) for assistance, at phone numbers posted at restroom entrances. The surveillance COR will verify and inspect contractor performance IAW the Quality Assurance Surveillance Plan (QASP) and Performance Plan (PP).

4) Each break room and locker room shall have their checklist posted in the room, along with a copy of the corresponding housekeeping plan. Supervisors shall maintain all checklists IAW OC-ALC 48-140, chapter 3, Housekeeping.

5) NA or the words "not applicable" shall be used to indicate blocks or columns which do not apply (e.g., there is no graveyard shift, the frequency is weekly instead of daily).

6) Supervisors shall fill in blank column headings with applicable name for shop areas to be cleaned by contract personnel (e.g., Break Room, Locker Room or Change Area, Tool Crib, etc.).

7) WIC/CF#: Shop I.D. number assigned by Bioenvironmental Engineering. It is shown in the SUBJECT line on the first page of Industrial Hygiene Survey Letters (e.g., 391A, 0151, 201F, 600C, etc.).