

**MWI 8550.4
REVISION G**

EFFECTIVE DATE: January 16, 2013

EXPIRATION DATE: June 5, 2022

MARSHALL WORK INSTRUCTION

AS01

AIR EMISSIONS COMPLIANCE

COMPLIANCE IS MANDATORY

DIRECTIVE IS UNCONTROLLED WHEN PRINTED

Verify current version before use at <https://dml.msfc.nasa.gov/directives>

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 2 of 10 |

DOCUMENT HISTORY LOG

| Status (Baseline/ Revision/ Change/ Revalidation/ Canceled) | Document Revision/ Change | Effective Date | Description |
|--|---------------------------------|-------------------|--|
| Baseline | | 8/26/02 | [Footer URL updated 12/01/2003 by Directives Manager] |
| Revision | A | 10/22/2004 | This revision is in response to an action from NASA Headquarters requiring specific verbiage and updating document references. |
| Revision | B | 11/07/2006 | This revision updates organizations and removes requirements for inspections and reporting for operations that are no longer permitted. |
| Revision | C | 9/4/2007 | MPR 3410.1, "Training and MWI 3410.1, "Personal Certification Program" added to 3. Applicable Documents. User requirements for reporting new processes or process modifications changed in 6.1 General. Verbiage for boiler O&M plan changed to more accurately reflect Title V requirements in 6.1 General. Removed requirements for operating procedures and reporting requirements that are no longer required by the Title V permit in 6. Instructions. Record retention for refrigerant equipment certification revised, record retention times and NRRS citations removed, and a statement added that all records will be handled as permanent pending retention approval in 9. Records. MSFC SHE training requirements added in 10. Personnel Training and Certification. |
| Revision | D | 8/25/2008 | Revised 2. Applicability statement to address the applicability of this directive to the Michoud Assembly Facility. This MWI does not apply to MAF. Revised training info in Section 10 since all environmental compliance training has been combined into a single module, SHE317 Environmental Compliance Training. |
| Revision | E | 9/4/2009 | Revised 6.1.1.1 Propulsion System Testing definition. At 6.1.1.7 a. added Title V permit record keeping requirements. Revised 6.1.1.10 to include reference to records maintained by entities other than EEOH, excessing and removing unused refrigerant recovery machines, to turn in unused ODS containing chemicals, and to label ODS containers. At 6.1.2.10 replaced "certify" with "submit certification." Added 6.1.2.11 information on monthly inspections and SHEtrak database. Added 6.1.2.12 for EEOH to submit annual emissions report. At 6.7 added Bulk Plant inspection requirements. Revised 6.10.1 information that air stripper is out of service. Revised 6.11.1 to include reference to MWI 8550.2, Stormwater Management, best management practices. Revised 9. Records for record keeping requirements to meet air permit adding clarification to responsible record keeper, location of records, training records retention, and SHEtrak database requirement. Modified figure 1, figure 2, and figure 3. Removed most specific permitted unit requirements and added links to applicable permits, laws, and regulations. |
| Revision | F | 4/16/2010 | Added hyperlink to Clean Air Act Title V permit and to unit specific permits to 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, and 6.13. Removed unit specific permit requirements from 6.6 and 6.7. Added section 6.14, Greenhouse Gas Emissions. [On 2/24/11, at the request of the OPRD, administrative changes were made at 6.5.1.1, 6.6.1.1, 6.7.1.1, 6.8.1.1, 6.9.1.1, 6.10.1.1, 6.11.1.1, 6.12.1.1 and 6.13.1.1 to delete duplicate urls.] |
| Revision | G | 1/16/2013 | Major re-write, moved EEOH instructions to OWI, used current template and applicability statement. |
| Change | I | 7/2/15 | On 6/10/15, at the request of the OPRD, administrative changes were made to update website link in 5.1, 5.1 Note, 5.3.2, and Appendix D. Removed from 5.2. |
| Revalidation | G | 6/5/2017 | Revised for five year expiration review, which included the applicable documents and forms, Updated link in Appendix A, and signature. |

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 3 of 10 |

1. PURPOSE

The purpose of this MWI is to provide instructions for air emissions compliance activities at Marshall Space Flight Center in accordance with MPR 8500.1.

2. APPLICABILITY

2.1 This MWI applies to Center personnel, programs, projects, and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. (“Contractors,” for purposes of this paragraph, include contractors, grantees, Cooperative Agreement recipients, Space Act Agreement partners, or other agreement parties.)

2.2 This MWI does not apply to the Michoud Assembly Facility (MAF). MAF follows procedures established in organizational issuance AS60-OI-004, Air Emissions Compliance at MAF.

2.3 This MWI applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” or “can” denote discretionary privilege or permission; “should” denotes a good practice and is recommended, but not required; “will” denotes expected outcome; and “are/is” denotes descriptive material.

2.4 This MWI applies the following: all document citations are assumed to be the latest version unless otherwise noted.

3. AUTHORITY

MPR 8500.1, MSFC Environmental Engineering and Occupational Health Program

4. APPLICABLE DOCUMENTS AND FORMS

4.1 MSFC Major Source Operating Permit (Title V Permit)

4.2 The Clean Air Act of 1990 and Amendments, 42 U.S.C sec. 7401, et seq., Chapter 85

4.3 Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 604.4
Protection of Stratospheric Ozone, 40 CFR Part 82

4.4 Alabama Department of Environmental Management (ADEM) Administrative Code 335-3

4.5 AS10-OI-052, Environmental Management

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 4 of 10 |

5. INSTRUCTIONS

NOTE: Instructions specific to EEOH are maintained within AS10-OI-052, "Environmental Management."

5.1 Air Permits for New and Existing Significant Sources of Air Pollution

The Clean Air Act (CAA) is the comprehensive Federal law that regulates air emissions from area, stationary, and mobile sources. Title V of the CAA requires equipment and process that emit chemicals, particles, fumes, or smoke into the air to be evaluated and possibly permitted. MSFC is a CAA Title V major source of air emissions. As such, emission sources such as paint booths, sandblast facilities, fuel-burning equipment, boilers, fuel tanks, generators, surface coating operations, vapor cleaning operations, handwipe cleaning operations, and pipe cleaning operations utilizing Hazardous Air Pollutants (HAPs) solvents, or Ozone Depleting Substances (ODSs) for cleaning, gasoline bulk plant operations, propulsion system testing operations, abrasive blasting operations, air stripper operations, and degreasers are required to have air permits before they are constructed. Other sources of air emission permitted between the Title V Permit renewals are permitted through individual operating permits. The requirements of the individual operating permits are available at <https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>.

NOTE: MSFC permits these sources through the CAA Title V MSFC Major Source Operating Permit. Hereafter referred to as Title V Permit. The Title V Permit is renewed every five years through ADEM. The permit includes permitted sources at MSFC and their emission, reporting, and record keeping requirements. The requirements of Title V permit are available at <https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>. These individual permits are rolled into the Major Source Operating Permit upon its renewal every 5 years.

5.2 Determination of Air Pollution Sources as Insignificant

Air emission sources categorized as insignificant do not require permits, but must be included in the list of Insignificant Sources. The user shall consult with Environmental Engineering & Occupational Health Office (EEOH) regarding determination of significant/insignificant status.

5.3 Operators and Equipment Using Refrigerants

Title VI Stratospheric Ozone Protection Program of the CAA is applicable to appliances and equipment using Class I and Class II ozone depleting substances.

5.3.1 Operators shall obtain and keep on file in their supervisor's office certification to use and maintain refrigerant equipment and appliances; and

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 5 of 10 |

5.3.2 The equipment used for maintenance shall be certified by the EPA. The certification requirements listed in the Title V Permit are available at <https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>.

5.4 Ozone Depleting Substances Labeling

The user shall label all containers in which an ODS substance is stored or transported with the following language: WARNING: Contains [or manufactured with, if applicable] [insert name of substance], a substance which harms public health and environment by destroying ozone in the upper atmosphere. If a container of ODS chemicals does not have a label, please contact EEOH at 544-4246 or 544-7434 to obtain a label.

5.5 Greenhouse Gas Emissions

MSFC is subject to the EPA Final Mandatory Greenhouse Gas (GHG) Rule when MSFC emits more than 25,000 metric tons/year of GHG. The gases covered by the proposed rule include but are not limited to carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and other fluorinated gases including nitrogen trifluoride (NF₃) and hydrofluorinated ethers (HFE). When MSFC exceeds the 25,000 metric tons/year emissions of GHG, the user will be notified by EEOH how to report emissions from equipment and operations.

6. CANCELLATION

MWI 8550.4F, Air Emissions Compliance, dated January 16, 2013.

Original signed by

Todd A. May
Director

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|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 6 of 10 |

APPENDIX A

DEFINITIONS

Air Stripper. Equipment used to remove Volatile Organic Compounds (VOCs) from groundwater or any liquid stream by contacting with air. The VOCs are picked up by the air and vented out to the atmosphere, and the stripped water is sent to storage.

Bulk Gasoline Plant per EPA. Any gasoline storage and distribution facility that receives gasoline by pipeline, ship, barge, or cargo tank and has a gasoline throughput of less than 20,000 gallons per day. Gasoline throughput is the maximum calculated design throughput as may be limited by compliance with an enforceable condition under Federal, state, or local law and discoverable by the administrator and any other person.

Bulk Gasoline Plant per ADEM. A gasoline storage and distribution facility with an average daily throughput of 76,000 liters (20,000 gallons) or less in any calendar month that receives gasoline from bulk terminals by trailer transport, stores it in tanks, and subsequently dispenses the gasoline via account trucks to local farms, businesses, and gasoline-dispensing facilities.

Class I and Class II Ozone Depleting Substance (ODS). Controlled substances listed in Appendix A and Appendix B, respectively, to EPA's Protection of Stratospheric Ozone Standards (40 CFR 82, Subpart A). The following Web site address provides a link to the Class I and Class II ODS: <https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>.

Clean Air Act (CAA). The Clean Air Act authorizes the establishment of federal and state regulations that limit emissions stationary and mobile sources of air pollutants.

Gasoline. A petroleum distillate having a Reid vapor pressure of 27.6 kPa (4 psia) or greater that is used as fuel for internal combustion engines.

Hazardous Air Pollutant (HAP). Any air pollutant listed in or pursuant to section 112(b) of the CAA or in Appendix G to ADEM Administrative Code 335-3-16.

Handwipe Cleaning Operation. Removal of contaminants such as dirt, grease, oil, and coatings from an aerospace vehicle or component by physically rubbing it with a material such as a rag, paper, or cotton swab that has been moistened with a cleaning solvent.

Fuel-Burning Equipment. Equipment, device, or contrivance and all appurtenances thereto, including ducts, breechings, fuel-feeding equipment, ash removal equipment, combustion controls, stacks, and chimney, used primarily, but not exclusively, to burn any fuel for the purpose of indirect heating in which the material being heated is not contacted by and adds no substance to the products of combustion.

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 7 of 10 |

Major Source. A major source is any stationary source (or group of sources in a contiguous area under common control) emitting, or with the potential to emit (considering controls), 10 tons per year of any HAP or 25 tons per year of any combination of HAPs.

Ozone Depleting Substances (ODS). Synthetic compounds, including chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), which migrate to the stratosphere and destroy the ozone layer.

Paint Booth or Surface Coating Booth. An enclosed room with an air circulation and exhaust system, enclosed area with an air circulation and exhaust system within a building, or a platform with a hood and exhaust system for paint or coating or corrosion control chemical application.

Pipe Cleaning. Using solvents to remove dirt, grease, and other contaminants to NASA standards from existing or new lines carrying liquid oxygen, liquid nitrogen, gaseous nitrogen, gaseous helium, or fuel.

Propulsion System Testing. Testing of sub-scale or full-scale versions of propulsion systems that combust RP-1 fuel. Propulsion systems that combust only hydrogen with oxygen or only methane with oxygen are not included in this definition because there are no significant emissions of regulated pollutants.

Solvent. Organic materials which are liquid at standard conditions and which are used as dissolvers, viscosity reducers, or cleaning agents (ADEM 335-3-1-.02 [ppp]).

Surface Coating. A material that is applied to the surface of an aerospace vehicle or component to form a decorative, protective, or functional solid film, or the solid film itself.

Title V Permit. Title V is part of the 1990 Clean Air Act Amendments (CAAA) that mandates creation of an Operating Permits Program in each state in order to create consistency in operating permit requirements throughout the country. The Title V Permit is a Federally-enforceable permit that consolidates into one document all applicable pollution control requirements to which a “major” source is subject.

Volatile Organic Compound (VOC). Any organic compound which participates in atmospheric photochemical reactions, or which is measured by a reference method, or an equivalent method, an alternative method, or which is determined by procedures specified under the subparts of 40 CFR 60.

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 8 of 10 |

APPENDIX B

ACRONYMS

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|-------------------|--|
| ADEM: | Alabama Department of Environmental Management |
| CAA: | Clean Air Act |
| CAAA: | Clean Air Act Amendments |
| CAS: | Chemical Abstract Service |
| CFC: | Chlorofluorocarbon |
| CFR: | Code of Federal Regulations |
| CH ₄ : | Methane |
| CO ₂ : | Carbon dioxide |
| EEOH: | Environmental Engineering & Occupational Health Office |
| EPA: | U.S. Environmental Protection Agency |
| GHG: | Greenhouse Gas |
| HAP: | Hazardous Air Pollutant |
| HCFC: | Hydrochlorofluorocarbon |
| HFC: | Hydrofluorocarbons |
| HFE: | Hydrofluorinated ethers |
| kPa: | Kilopascal |
| MAF: | Michoud Assembly Facility |
| MPR: | Marshall Procedural Requirements |
| MSFC: | Marshall Space Flight Center |
| MWI: | Marshall Work Instruction |
| NASA: | National Aeronautics and Space Administration |
| NF ₃ : | Nitrogen trifluoride |
| N ₂ O: | Nitrous oxide |
| NSPS: | New Source Performance Standards |
| ODS: | Ozone Depleting Substance |
| PFC: | Perfluorocarbons |
| Psia: | Pounds per square inch absolute |
| RP-1: | Rocket Propellant -1 |
| SF ₆ : | Sulfur hexafluoride |
| VOC: | Volatile Organic Compound |

| | | |
|---|-------------------------------|---------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 9 of 10 |

APPENDIX C (Reserved for Verification Matrix)

| | | |
|---|-------------------------------|----------------------|
| Marshall Work Instruction AS01 | | |
| Air Emissions Compliance | MWI 8550.4 | Revision: G |
| | Date: January 16, 2013 | Page 10 of 10 |

APPENDIX D

RECORDS

Records will be maintained according to the List of AS10 Environmental Records that is located at the following link: <https://explornet.msfc.nasa.gov/community/msfc/office-of-center-operations/as10>.

NOTE: Clean Air Act Title V references do not pertain to retentions, but to other record keeping requirements listed in the permit such as the requirement to have records stored in a manner in which they can be easily accessed by regulators.